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DEPARTMENT OF THE INTERIOR  
IRRIGATION BRANCH

REPORT OF THE PROCEEDINGS OF THE  
NINTH ANNUAL CONVENTION  
OF THE  
WESTERN CANADA  
IRRIGATION ASSOCIATION

HELD AT  
BASSANO, ALBERTA

November 23, 24 and 25, 1915

Published by the authority of the Hon. W. J. Roche  
Minister of the Interior

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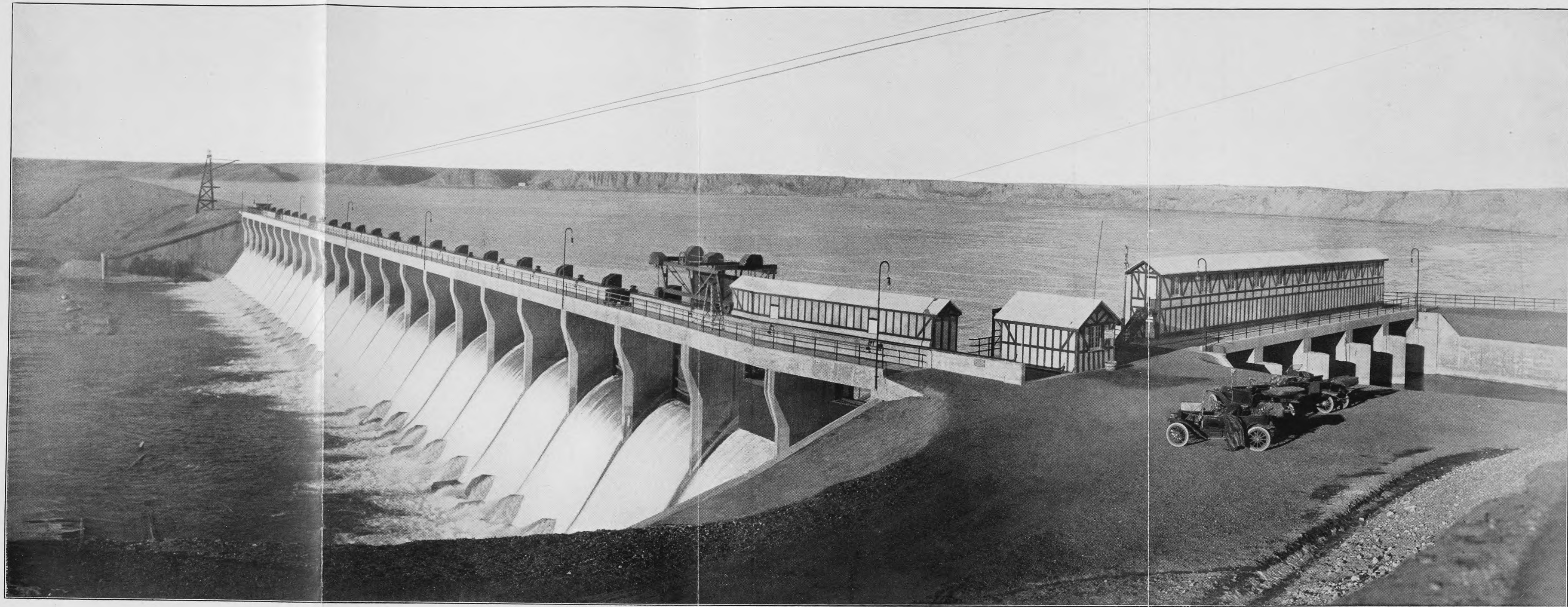












Bassano Dam.





DEPARTMENT OF THE INTERIOR  
IRRIGATION BRANCH

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NINTH ANNUAL CONVENTION  

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IRRIGATION ASSOCIATION

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## **PREVIOUS CONVENTIONS**

Calgary, Alberta, 1907.

Vernon, British Columbia, 1908.

Lethbridge, Alberta, 1909.

Kamloops, British Columbia, 1910.

Calgary, Alberta, 1911.

Kelowna, British Columbia, 1912.

Lethbridge, Alberta, 1913.

Penticton, British Columbia, 1914.



Hon. W. J. Roche, Minister of the Interior  
Honorary President Western Canada Irrigation Association

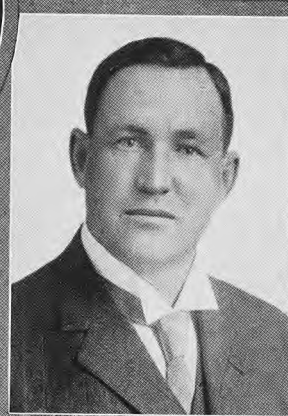




*Hon. A. L. Sifton  
Premier of Alberta*



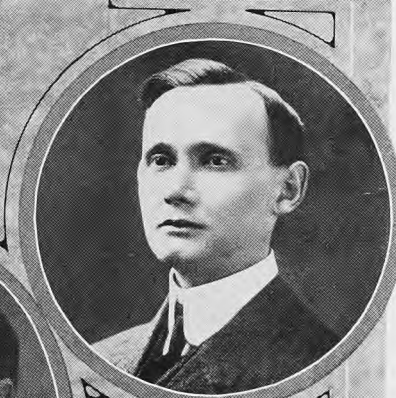
*Hon. W. R. Ross  
Minister of Lands, B.C.*



*Hon. Duncan Marshall  
Minister of Agriculture,  
Alberta.*



*G. A. Marnock  
President of the Board  
of Trade, Lethbridge*



*W. H. Fairfield  
Supt. Dominion Experimental  
Farm, Lethbridge*



*Dr. J. G. Rutherford  
Supt. of Agriculture &  
Animal Industry, C.P.R.*

# THE WESTERN CANADA IRRIGATION ASSOCIATION

## OFFICERS FOR THE YEAR 1914-1915.

Honorary President—The Honourable W. J. ROCHE, Minister of the Interior.  
President—The Honourable DUNCAN MARSHALL, Minister of Agriculture for the Province of Alberta.

Vice-President—DR. C. W. DICKSON, Kelowna, B.C.

Second Vice-President and Chairman Executive Committee—WILLIAM PEARCE, Calgary, Alberta.

## EXECUTIVE COMMITTEE

R. C. PEGLER, Bassano, Alberta.

F. H. PETERS, Calgary, Alberta.

W. HUCKVALE, Medicine Hat.

W. H. FAIRFIELD, Lethbridge.

JAS. JOHNSON, Nelson, B.C.

WILLIAM YOUNG, Victoria, B.C.

ARTHUR CHAMBERLAIN, Kamloops, B. C. (Enlisted Aug., 1915). C. E. LAWRENCE.

J. C. DUFRESNE, Penticton, B.C. (Enlisted early spring). MAURICE SMITH.

Permanent Secretary—NORMAN S. RANKIN, Calgary, Alberta.

## LOCAL BOARD OF CONTROL.

Chairman—J. S. MAVOR.

Vice-Chairman—H. SMITH.

Secretary—R. A. TRAVIS.

G. W. BOYD, O. DAEHLER, W. FLANAGAN, G. M. PEARCE, B. T. GRAY, P. W. STONE.

## PROMPTNESS.

The essence of success in all meetings, excursions and lectures is promptness, and as the time is limited it is the desire of the executive that every delegate make the best of it.

## RULES.

Rules governing the conduct of the Convention will be read by the Secretary from the constitution prior to the opening address. They will be found on the inside back cover. Strict compliance with these will expedite business.

## SECRETARY'S OFFICE.

The permanent Secretary's headquarters are at the Berkeley Hotel.

## REGISTRATION.

Delegates are requested to register with the permanent Secretary or his assistant on arrival or at Padden's Hall during convention hours.

## RAILWAY CERTIFICATES.

Holders of standard railway certificates will present them to the Secretary or his assistant at his office in the Berkeley Hotel or at Padden's Hall during convention hours.

## BADGES.

The Secretary will issue a badge to each delegate upon registering, and it should be worn conspicuously during the Convention to enable the Chairman to recognize properly accredited delegates. An additional badge of a distinguishing colour will also be worn by each executive.

## ADMISSION.

There will be no charge for admission to any session of the Convention, and the public are cordially invited to attend. Farmers are especially invited to all sessions and to participate in the discussions.



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## The Story of Irrigation By

THE WESTERN  
CANADA IRRIGATION  
ASSOCIATION

### QUESTION :

What is the source of all wealth?

What produces the wealth?

Who furnishes the labour?

What natural agencies does the land require?

How is water supplied?

Which is best?

Why is Irrigation best?

What is its effect?

What does increased production do?

What does increased prosperity do?

What does increased settlement do?

What will improved social conditions do?

What comes with better people?

What is the foundation of the Empire?

### ANSWER :

Land.

Labour.

The Farmer.

Sunshine and water.

Rain, snow or Irrigation.

Irrigation.

Because it is always available.

Increases production.

Increases prosperity.

Increases settlement.

Improves social conditions.

Make better people.

Better home conditions.

The Home.

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**IRRIGATION Advances Agriculture, Produces Prosperity, Inculcates Industry  
Promotes Patriotism, Saves the Soil and Provides for Posterity.**

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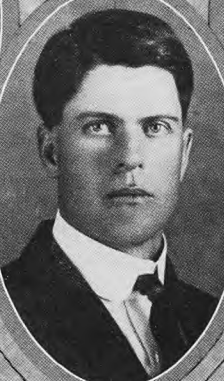
BOARD of  
CONTROL



*R.A. Travis*  
Secretary



*Harvey Smith*  
Vice-Chairman



*Mayor W. Flanagan*  
Chairman  
Entertainment Committee



*Percy Stone*  
Chairman  
Publicity Committee



*O. Daehler*  
Chairman  
Reception Committee



*J.S. Mavor*  
Chairman



*G.W. Pierce*  
Chairman  
Hotels & Accommodation Committee



*G.W. Boyd*  
Chairman  
Financial Committee

BASSANO



**THE WESTERN CANADA IRRIGATION ASSOCIATION CONVENTION****Bassano, Alberta****TUESDAY, NOVEMBER 23rd****PROGRAMME****OPENING SESSION 9.30 a.m.**

9.30—The meeting will assemble in Padden's Hall. Delegates will arise and led by the orchestra, join in singing "God Save the King."  
 Call to Order. The Honourable Duncan Marshall, President of the Association will call the meeting to order, and declare the Ninth Annual Convention formally opened.

9.45—Welcome to the Province, Honourable A. L. Sifton, Premier of Alberta.

10.00—Welcome to the town, His Worship, Mayor Flanagan.

10.10—Introduction of J. S. Mavor, Chairman, Local Board of Control.

10.20—President's Address, The Honourable Duncan Marshall.

10.40—Secretary's Report, Norman S. Rankin.

10.50—Address, Honourable W. R. Ross, Minister of Lands, B. C.

11.10—Address, Honourable W. A. Motherwell, Minister of Agriculture, Saskatchewan, or Representative.

11.25—Address, J. S. Dennis, Vice-President, International Irrigation Congress.

11.45—Address, E. F. Drake, Superintendent of Irrigation, Ottawa.

12.00—Address, T. A. Hargrave, President, Cypress Hills Water Users' Association, Maple Creek, Sask.

12.10—Appointment of Committees on Credentials and Resolutions.  
 Adjournment to Exposition Hall. Official opening of Soil Product Exposition.

**AFTERNOON SESSION**

2.00—Address, James Speakman, President United Farmers of Alberta. Discussion.

2.45—I. D. O'Donnell, Supervisor of Irrigation, U.S. Reclamation Service, Billings, Montana, "Better Farming." Discussion.

3.30—E. A. Howes, Dean Faculty of Agriculture, Alberta University, Edmonton, "Agricultural Education in Alberta."

4.10—Dr. J. G. Rutherford, C. M. G., Superintendent Agriculture and Animal Husbandry, C. P. R., "Livestock on the Irrigated Farm." Discussion.  
 Adjournment.

## EVENING SESSION.

8.00—Marjorie M. Goldie, Instructor in Household Science, Alberta Government, Olds, "Advantage of Household Science Training for Country Girls."

9.00—S. S. Dunham, Vice-President United Farmers of Alberta, Lethbridge, "The Future of Irrigation in Southern Alberta."

Following the Address of Welcome to the Province on the above day, His Honour Lieutenant-Governor Dr. Brett will give an Address of Welcome to the Foreign Delegates.

## WEDNESDAY, NOVEMBER 24.

## MORNING—ALFALFA SESSION.

9.30—Don H. Bark, formerly in charge of U. S. Irrigation Investigations in Idaho. Discussion. "The Growing of Alfalfa."

0.15—"Alfalfa, the Basis of Successful Irrigation Farming." S. G. Porter, Irrigation Branch, Department of the Interior, Calgary. Discussion.

1.00—"Crop Rotations on Irrigated Land," W. H. Fairfield, Superintendent Dominion Experimental Farm, Lethbridge. Discussion.

1.45—"The Alfalfa Farmer," (Covering the adaptability of soils, planting, cultivating, irrigating, harvesting, food values, as a factor in home building, etc.,) Jos. T. Hinkle, Vice-President International Irrigation Congress, Hermiston, Oregon. Discussion.

2.30—Preliminary Reports: Committee on Credentials. Committee on Resolutions. Adjournment.

## AFTERNOON SESSION.

2.30—There will be no afternoon meeting. Instead, Delegates will assemble at Convention Headquarters where automobiles or teams will be taken for a visit to the Bassano Dam, Crawling Valley Dam, and other points of interest in the vicinity.

## EVENING SESSION.

8.00—G. H. Hutton, Superintendent Dominion Experimental Farm, Lacombe, "Grading up a Dairy Herd." Discussion.

9.00—R. M. Winslow, Secretary B. C. Fruit Growers' Association, "Getting B. C. Fruit to the Prairie Farmer." Discussion.



## THURSDAY, NOVEMBER 25.

## MORNING SESSION.

- 9.30—William Young, Controller of Water Rights, Department of Lands British Columbia, "The Success of Water Users' Communities in B. C." Discussion.
- 10.15—"Practical Irrigation," Don H. Bark, formerly in charge of U. S. Irrigation Investigations in Idaho. Discussion.
- 11.00—D. J. Wylie, Honourable President Cypress Hills Water Users' Association, Maple Creek, "Livestock." Discussion.
- 11.45—G. R. Marnoch, President Lethbridge Board of Trade, Address.
- 12.15—Final Report, Committee on Resolutions. Adjournment.

## AFTERNOON SESSION.

- 2.00—W. E. Scott, Deputy Minister of Agriculture, British Columbia, "Agricultural Opportunities in British Columbia." Discussion.
- 2.45—G. D. Walters, Irrigation Branch, Department of the Interior, "Field Irrigation Investigation by the Irrigation Branch, Department of the Interior." Discussion.
- 3.30—Address, D. W. Hayes, Chief Engineer, Southern Alberta Land Co. "Cost Accounting for Farmers."
- 4.15—Final Report, Committee on Resolutions Election of Officers and Selection of next place of meeting.

## EVENING.

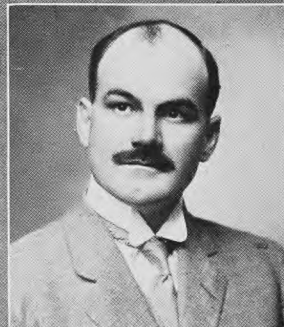
- 8.30—Reception Banquet to Delegates, Officers and Speakers, tendered by the Local Board of Control.
- Announcement of Judges of winners of Premiums in the Soil Product Exposition.



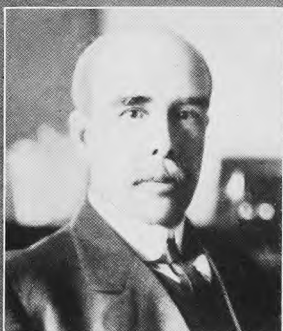
*S.G. Porter*  
Asst. Chief Engineer  
Irrigation Branch, Dept. of the Interior



*Hon. W.A. Motherwell*  
Saskatchewan



*G.H. Hutton*  
Supt. Dom. Expt. Farm  
Lacombe, Alberta.



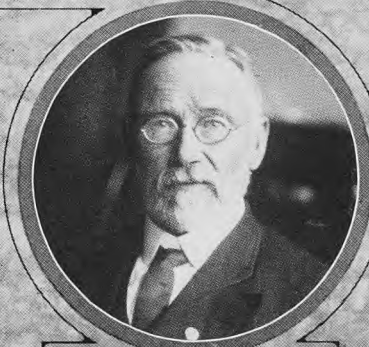
*J.S. Dennis*  
Asst. to the President  
of the C.P.R.



*Miss M.M. Goldie*  
Instructor in Household Science  
Provincial Agricultural School Olds, Alta.



*Don H. Bark*  
Formerly in charge of U.S. Irrigation  
Investigations in Idaho



*James Speakman*  
President United Farmers of Alberta,  
Calgary. (Since deceased)



*S.S. Dunham*  
Vice-President United Farmers  
of Alberta, Lethbridge.



*Wm. Pearce*  
Retiring Chairman  
Executive Committee W.C.I.A.



*E.F. Drake*  
Supt. of Irrigation,  
Dept. of the Interior



*E.A. Howes*  
Dean, Faculty of Agriculture  
University of Alberta, Edmonton



*F.M. Smith*  
One of the B.C. Executives  
of the W.C.I.A.



*William Young*  
Controller of Water Rights B.C.



*F.H. Peters*  
Commissioner of Irrigation,  
Dept. of the Interior



*Norman S. Rankin*  
Secretary W.C.I. Association



## CONVENTION RULES

Each morning session shall be called to order at 9.30 a.m., each afternoon at 2 p.m., and each evening session at 8 p.m. Morning session shall adjourn at 12.30 p.m. unless otherwise ordered by vote of the Convention. All sessions shall open promptly.

Any delegate or other member desiring to speak shall address the Chair, and unless called on by name shall begin by giving his name and place. Communications on subjects not entered in the programme will be limited to five minutes unless otherwise directed by vote of the Convention.

General resolutions, after reading, shall be referred to the Committee on Resolutions, without debate, and no general resolution shall be received after the opening of the Convention, without unanimous consent. Special resolutions relating to the conduct of the association may be read and considered at the discretion of the presiding officer after examination by him.

The time of speakers in general discussion shall be limited to ten minutes, and the time of speakers on questions or resolutions relating to the conduct of the Convention shall be limited to five minutes unless otherwise directed by vote of the Convention.

For the convenience of the Convention and speakers a bell will ring once three minutes before the close and twice at the close of the time allotted to each speaker on the programme. In the course of discussion and in addresses not entered on the programme, the bell will ring once, one minute before the close and twice at the close of the time allotted to the speaker under these rules.

Any speaker rising to address the Convention, who is in the employ, whether by retainer or otherwise, of any public service corporation which is interested in the action or subjects of deliberation of this Convention, shall mention the fact and nature of such employment before proceeding to speak.

## THE WESTERN CANADA IRRIGATION ASSOCIATION

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### OFFICERS FOR THE YEAR 1915-16.

*Honorary President*—Honourable W. J. ROCHE, Minister of the Interior, Ottawa.

*President*—Honourable W. R. ROSS, Minister of Lands, Victoria, B.C.

*Honorary Vice-President*—J. S. DENNIS, Assistant to the President, C.P.I.  
Calgary.

*First Vice-President*—Honourable DUNCAN MARSHALL, Minister of Agriculture,  
Edmonton.

*Second Vice-President*—Honourable SENATOR BOSTOCK, Ducks, B.C.

*West of the Rockies*—F. MAURICE SMITH, Penticton, B.C.

JAMES JOHNSTONE, Nelson, B.C.

J. L. BROWN, President, Agricultural Society, Kamloops, B.C.

W. E. SCOTT, Deputy Minister of Agriculture, Victoria, B.C.

*East of the Rockies*—F. H. PETERS, Commissioner of Irrigation, Department  
the Interior, Calgary, Alberta.

R. A. TRAVIS, Secretary, Board of Trade, Bassano, Alberta.

G. R. MARNOCH, President, Board of Trade, Lethbridge, Alberta.

JOSEPH DIXON, Maple Creek, Saskatchewan.

# Report of the Proceedings

Of the

## Ninth Annual Convention

Of the

# Western Canada Irrigation Association

Held at Bassano, Alberta

On

November 23, 24 and 25, 1915

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### **OPENING SESSION--Tuesday, November 23rd--9.30 a.m.**

The meeting assembled in Padden's Hall and delegates led by the orchestra joined in singing "God Save the King."

The Honourable Duncan Marshall, President of the Association called the meeting to order and said: "Ladies and Gentlemen,—I have very much pleasure indeed in expressing our very great pleasure at having the Lieutenant-Governor honour this meeting of the Western Canada Irrigation Association by attending in person and I shall now introduce His Honour the Lieutenant-Governor, who will formally open this Convention."

Lieutenant-Governor Brett: "Mr. President, Members of the Western Canada Irrigation Association, Ladies and Gentlemen,—I am very pleased indeed to be here to-day to associate myself with the gentlemen who are devoting so much of their time and talents to this splendid work of irrigation. No better work can be engaged in by any citizen. It seems to me that the fact that so many are interested in it shows that they are men who fully realize their responsibilities of citizenship: the responsibility of developing the resources of this great country—one of the greatest heritages that has been given to man. In giving your time and attention you are doing a noble work. Without the full development of these broad acres in this splendid country, we never can hope that it will be what we all have hoped it would be, and what we expect from your efforts and the efforts of others engaged in a similar work, that it will become. To our friends from across the line I would join with Premier



Sifton in giving you a hearty welcome. I welcome you because you are taking an interest in this great work and have come here to give your mature experience and advice to the members of this Convention and I welcome you more particularly because the fact that you are here indicates that friendly relations existing between Canada and the United States to the south of us. (Applause.) I could not if I wished, attempt to give you any pointers on irrigation. Well, I do not know about it is a good deal. I will content myself with having the pleasure of listening and being educated along that line. I now declare this Convention formally opened." (Applause.)

Chairman: "This Convention is I have no doubt, very greatly pleased to have the Premier of the province of Alberta present who has come here to express the welcome of the province of Alberta to the delegates from Saskatchewan and British Columbia and visiting irrigationists from across the country. I have very much pleasure in introducing Premier Sifton."

Premier Sifton: "Mr. Chairman, Ladies and Gentlemen,—It appears to me ready that there are two speeches of welcome and it almost works a supererogation to welcome delegates who have taken an interest in this Convention. On behalf of the province of Alberta, I am pleased to see so many delegates from British Columbia and Saskatchewan here for the purpose of assisting in this great work. It is unnecessary for us who have not been practically engaged in irrigation to explain to you gentlemen who have spent your lives at it, the practical effects of irrigation. You know what it has done for you. You know what it has done for the different places and districts from which you have come, and you know the difficulties and trials that there have been in this country to work up the irrigation question to the extent that it has reached at the present time. There will always be differences of opinion in regard to the irrigation question. Some years Providence looks after the matter of irrigation and you do not require irrigation and if it rains continuously for two or three years, we begin to think irrigation a needless expense and think it just as well to leave it altogether to Providence. But Providence has been benign in giving to this country water that can be stored for the years in which there is no rain. You who have lived in this country know that for some ten years it was looked in the rain storms. The snow did not fall and there were dry seasons in which grass would not grow and there was no feed or water for the cattle. Because for the past two or three years, there has been rain, some of us have forgotten that there have been dry years and there is always the possibility of such years coming again. There is no doubt it would mean ruin for this particular part of the country unless the surplus moisture was accumulated and stored for future use. There is no question in the minds of people who have been here some ten or fifteen years in regard to this matter. From 1885 to 1895 this particular portion of the country did not grow crops; nobody thought of putting in crops. It was no use. There were only a few people who grew a thing but cattle and they spread them around here and then spent immense sums of money to water them. The times have changed now and for their

few years with one or two exceptions, there have been excellent returns from this country but you have to ensure against the future and in the form of an insurance policy money spent for irrigation in this country is a thing we cannot afford to do without. We cannot afford either to have year after year go by without crops, and we can afford to invest money in insurance by way of irrigation profits, and I hope that the delegates that are here to-day will spend some time at least, in the discussion of the proper kind of crops to be raised in this particular portion of the country. Irrigation has been a wonderful success in the countries where you can grow fruit and where you can grow expensive crops and it makes a great difference how you grow them or what crops you grow when the country is worth thousands of dollars an acre, but in this country where so far ordinary crops have not been so successful, where even successful crops will be cheap crops, the main discussion of interest will be what kind of crops to grow under irrigation in this particular part of the country for the purpose of making irrigation a success. When this system was first introduced, I had a great many talks with Sir William White and also with Mr. Dennis and I took a great interest in it and my opinion has not changed at all although I am not a practical man in this line. I thought if they would devote attention to raising large crops of grain and feed and also starting of dairy farms in this section of the country it would make an undoubted success. I talked that to them at the time and I have not yet changed my mind in that respect. I would like to see people who have studied this thing and who have given practical attention to it come in as settlers and become settlers here accustoming themselves to the use of irrigation in this portion of the country, for it is the most profitable way of farming, and to keep on and make it what it should be, instead of a wilderness, a garden to the rest of these provinces. I thank you ladies and gentlemen for this opportunity." (Applause.)

Chairman: "This Convention decided one year ago to meet in the town of Bassano and His Worship Mayor Flanagan of the town is now to officially welcome the delegates who are in attendance at this Convention on behalf of the town."

Mayor Flanagan: "Mr. Chairman, Ladies and Gentlemen,—It is not my intention to try to make an address especially after hearing His Honour and Mr. Sifton. I just want to say to you how much we appreciate having you amongst us especially as you represent the Western Canada Irrigation Association. Irrigation is as you know, what we depend entirely upon, you might say, to make this one of the most populous centres of Alberta. Therefore, on behalf of the citizens of Bassano, I have much pleasure in welcoming you to our town. If there is anything we can do to make the time spent amongst us more pleasant, please command us." (Applause.)

Chairman: "The local arrangements for each one of these Conventions are under the direction of what is called the Local Board of Control. Mr. J. S.



Mayor Flanagan, of Bassano, Alta.



Mavor is Chairman of that Local Board of Control in Bassano and we shall now have a few remarks from Mr. Mavor."

Mr. Mavor: "Your Honour, Mr. Chairman and Ladies and Gentlemen,—It is a new experience, indeed a very pleasant one for me to welcome delegates to the Western Canada Irrigation Association meeting here to-day. It is very fitting in my own mind that this Convention should meet in Bassano, which by every right should be regarded as the capital of the irrigated area of the province of Alberta. We have been blessed during the past fall with a harvest which has brought sunshine to many a downcast heart because in former years throughout this particular district and farther to the south, we were suffering and suffering very badly from a lack of water. To insure against that this vast irrigation project now practically completed in the southern part of the province has been installed, and we hope that it will be a complete insurance against the failures which we have been subject to in the past from drought. We are duly thankful of course, that in the past year, we have not needed to bring water by artificial means to the land, but we know that we cannot have every year like this and probably next year and for many years to come the irrigation system established in this particular area will be a God-send to the farmers in the irrigated districts

It is a very remarkable fact that Western Canada is progressing the way it is in view of what is going on in the Old World. A holocaust of blood has not involved us personally, at any rate, in the terrible scenes that have been enacted in the old country. We have, and will have, with us probably during the Convention, a certain individual to remind us of the terrible horrors going on over there. In yonder chair sits a wounded hero hit in many places by shrapnel, and it makes us think when we look upon his manly face, that we have many, many things to be thankful for, and while we are probably doing what is necessary in providing necessary provisions for the army that is fighting for the right, we must not forget that we are dwelling in safety without the horrors surrounding us that are so close to every person in the countries of the Old World.

I am not very well versed in matters of irrigation with which this Convention will deal, but I presume it is met together with the idea of promulgating new ideas concerning the benefits to be derived from irrigation, based of course, upon practical experience, and I feel certain that with the large number of men present who are skilled in irrigation very many benefits will be forthcoming to the farmers generally throughout this country who are employing irrigation now and must use it in the future.

Permit me in closing to state again my pleasure as Chairman of the Local Board of Control, in joining with those who have spoken before to welcome you to our midst. I have forgotten one thing and that is, if the delegates do not already know, there is one man who has been indefatigable in his efforts to make this Convention a success. I refer to that Hercules of Publicity, Mr. Norman S. Rankin. I know that you will appreciate the amount of work which has fallen on his shoulders in bringing this Convention together and on

behalf of the Local Board of Control I give thanks to him for the very able and necessary assistance he has given us. I confess that I have not done what I should have done, probably, but to the local members I extend my personal thanks for their earnest and whole hearted assistance.

I hope that much good will result from your meeting." (Applause.)

Chairman: "As is generally known by the delegates here, the irrigation laws of Alberta and Saskatchewan are under the direction of the Dominion Government and particularly, the Department of the Interior. We have with us this morning, Mr. Bailey, representing the Superintendent of Irrigation at Ottawa and we will now have a few words from Mr. Bailey."

Mr. Bailey: "Mr. Chairman, Ladies and Gentlemen,—It was only a few moments ago when on entering this hall I saw a programme and noticed that Mr. Drake was down for a speech. He assured me that had he come he had no intention of giving any address. I therefore assumed that in representing him I would have an easy time and enjoy myself as an auditor. I know that Mr. Drake regrets being unable to be present at this time and at this moment I also regret it, but I can assure you of his continued interest in the work of this association is endeavouring to carry on, and he has at all times tried to do all in his power to further the interests of this association. I am not going to pretend to enter into a discussion of irrigation because I am not a practical irrigator—all my knowledge of irrigation having been gained in assisting the Superintendent of Irrigation in the administration of the Act. However, there are a number of irrigationists here whom I expect to meet and I look with pleasure upon the opportunity of listening to the discussions to take place. I expect to meet a number of people with whom I have been in correspondence. Hitherto, they simply meant names to me, but now I will be able to go back to Ottawa knowing them and taking a greater personal interest in my work."

I can assure you of the Honourable Dr. Roche's continued interest in the work of the Western Canada Irrigation Association. I have one thing to say that perhaps may be of interest to you. You know that in years past the Department of the Interior has published the report of the proceedings of the Convention. In 1907 the report of the association was quite a small pamphlet but as the work of the association has grown the pamphlet has grown until now it is a large report and a very creditable one which makes interesting reading. In this respect it differs from a number of departmental reports which make rather dry reading, and I would like to say here that a great deal of credit for such a fine report is due to your efficient Secretary, Mr. Rankin, for the splendid condition in which he sends his manuscript down for publication. It was feared that in view of the necessity for such strict economy the expenditure of public moneys during the continuance of the war there might be some question as to publishing the report this year. However, I am authorized by the Honourable Dr. Roche, to say that the cost of publishing this report will be borne by the Department of the Interior as in former years. Your Secretary has also been notified that authority has been given for it

inclusion in the Department's estimates of the \$500 grant to this association for next year. I think that this is practical assurance of the interest this department takes in your work. I am very glad to be here and hope to enjoy the future sessions of this association and to go back knowing you better and having learned a good deal. I thank you." (Applause.)

Chairman: The next feature on this programme is that unfortunate thing known as the Chairman's address. I will make this as brief as possible. I notice somebody who is a bit of a philosopher says "What is the source of all wealth?"—"Land," and at the bottom says, "What is the foundation of the Empire?"—"Home." Now if we get the home on the land, the source of all wealth, and the foundation of the Empire, I think we have got on pretty nearly all and it would seem to me if this man's philosophy is correct, the serious problem facing the farmer to-day is to get the right kind of homes on this land and I believe it is correct, and the business of getting the kind of homes that men like to live in and that women will like to live in on the land in our country is the most serious problem we have on hand and everything that conventions of this kind can do to improve farm conditions in the home, to make life more comfortable and satisfactory for people who live on the land, is the greatest thing to be done for people engaged in agriculture.

The foundation it seems to me of this thing is better training for the men and women who are going to farm in our country and better training for the boys and girls who are going to be better farmers of these provinces must begin in the public schools. It seems to me that the business of introducing agricultural education into our public schools in a practical and satisfactory way has perhaps been fairly long delayed. We have welcomed in the province of Alberta this year, the first real text book on agriculture for public schools that it has ever been my pleasure to read, and I was very glad indeed to have heard testimony on the train coming here yesterday that Dr. Rutherford said "the text book for agriculture for the use of the public schools is the finest text book on agriculture that I have ever read, and I am now reading it for the second or third time," he wished it was in the hands of every farmer in the province of Alberta. (Applause.) I was glad to inform him that the Department of Education in this province was making it their text book and one would be placed in the hands of every boy attending public school in the province of Alberta, and I hoped he would take it home and make his father read it. (Applause.)

I went to public school for a good while and it took me a good while to go through the public school anyway, and during that time I had a good many teachers and I have no recollection now of one teacher in a public school ever telling a boy or girl that it would be a good thing for him to stay on the farm or that the farm was a desirable place or that they could get something out of farming worth while, but all the smart fellows were encouraged to go on to high school and become public school teachers, and make money enough that way to take them into professions and other things in the business world and this is the thing that was dinned in my ears in the public school, I have no



recollection of any teacher encouraging a boy or girl to farm and do you wonder therefore, when these conditions are existing in our schools throughout the country, that there was so little aid given to agriculture.

If building homes on the farm is so important, we should get into the schools and into the minds of the public school teachers the right kind of spirit, that there is more to be got off the fields and out of life on the farm than there is in any other walk or calling in life. Until we do get public school teachers imbued with that view, we shall fail to get agricultural development along the lines that it ought to be developed.

I am not going to discuss agricultural education at any length, because Mr. Howes is on the programme to discuss it at this Convention, and I do not want to take up the time of the Convention in discussing it now. I want to say however, that during the last year we put on a campaign in the province of Alberta to get farmers' daughters to attend schools of agriculture. We never had any difficulty in getting the boys. All we had to do was to open the schools and the boys would come in. The old man will spend a couple of hundred dollars in a year on the boy because he thinks the boy will pick up something of value to him, but as to his daughter, he thinks that Bill Jones is paying some attention to her and Bill will probably take her off his hands and so he won't go to any expense about her as he thinks he would lose the investment entirely.

We found there was an absolute neglect in giving farmers' girls an opportunity for the kind of education they should have, and I am glad to say that we have more than doubled the attendance of farmers' daughters in our schools. I believe there is nothing in those institutions designed for giving boys and girls agricultural development more important than training girls and giving them new view points of the work they have to do in the farm home and the kind of training, and only that will make their work in the farm home a scientific operation instead of drudgery; that the making of butter will not be simply pounding cream until it turns into grease, but that, it is an operation requiring proper methods and proper treatment until it is made into the pure butter for the trade. If we can get this instilled into the minds of the girls and at the same time educate the boys in the schools to the fact that they have to make home surroundings more comfortable and easy for the wives and the sisters and the mothers in the home, we will be doing something real in agriculture. Have you ever heard a woman gossiping say, "Poor girl, she married a farmer." I do not think that there is any remark made that reflects so much discredit upon agriculture. We should have as many comforts and pleasures in our farm homes as we have in our homes in the cities. (Applause.)

In the country we have green grass to walk on. In the cities we are condemned to walk on concrete sidewalks. We have more freedom in the country than people have in cities and towns. The only thing to get into the minds of the boys and the girls is the "going to farm right" view point. Let me say to every farmer in this Convention; spend a week next summer fixing up your house; fix up the lawn; plant a few trees and flowers. They will be good to look at when you are tired; when you are sitting on the front porch just about

sundown you will find that you have not spent a better week in your life. I took that advice myself this summer. I took my two hired men, and with the little effort I can put in it myself, and I am not a very fierce worker in that line, we spent a whole week fixing up around our house and then after I got through and saw the result, I wondered why I did not do that long ago. If farmers would only do this, both inside and outside of their houses, and do it with some kind of care, they would impress the boys and girls with the fact that they can get as much pleasure in the country as in the cities.

There is another trouble with agriculture. It is no trouble for a farmer to spend a couple of hundred dollars for a gasoline engine, but he will growl for a year about putting \$25 into a new washing machine that will lighten the work in the home. These are the things that will work for the permanency of agriculture in this country. I have heard women declare that they hoped their boys and girls would never be condemned to the life that they had lived and hoped to get enough money scraped together to get them away from that life. It will not be necessary if we can get the boys and girls and the women of this country to view this thing from the right standpoint and endeavour to make life on the farm home a place of contentment. Instruct the boys in scientific agriculture so that they will get as much enjoyment from summer fallowing and from raising the best calf in the neighbourhood as men do in a profession. That will be the secret of success in agriculture in our country. It seems to me that at a convention of this kind, whether it be a dry farm convention or a wet farm convention, so long as it is a gathering of farmers, some attention should be given to agricultural education, beginning with the public school, in order that boys in the country may be induced to stay on the farm and may learn some of the attractions and satisfactions in life that can be got out of it.

If these things were placed before our boys and girls instead of everlastingly trying to encourage them off the farm, we would be doing a great deal for agriculture.

We are talking about "back to the land" to the people who have been in the city all their lives, and I will lend my efforts to inducing as many as possible of those who have been unfortunate enough to live in the city to get out on the land. I think that is the sort of rescue work that people in agriculture should be engaged in. Get as many people as possible out of the city to the land where they can do something for themselves and the country, but, there is a problem more serious than that; that is, keeping on the farm the boys and girls who have gathered that fund of knowledge that is so hard for a man to gain after reaching a certain period of his life, whether it is on irrigated land or dry land.

I am pleased to see the trend of affairs this fall in the province of Alberta. The farmers have had splendid grain crops—two crops in one practically—and have been able to sell it for a good reasonable price. I am glad to see amongst these farmers a great demand for live stock. You find everywhere you go that the men who made good out of their wheat crops are investing a lot of money in live stock so that there will be a large increase in the live stock of this province, thus laying a foundation for raising of live stock in the province. It is an exceedingly hopeful sign that farmers who have got this

# ROLL OF HONOR



*Capt. J. C. Dufresne*  
*of Penfiction*  
*Member Executive*



*B. T. Gray*  
*Chairman - Exhibition Committee*  
*Bassano*



splendid grain crop are providing against future emergencies by beginning to engage in mixed farming or live stock raising in this province.

It is not my intention to take up any more of your time. The different problems of irrigation will be discussed by those whose names appear on the programme, and I now have much pleasure in calling upon the Secretary, Mr. Rankin, to present his report. (Applause.)

SECRETARY: Mr. President, Ladies and Gentlemen,—The past year's operations of this Association have not been perhaps as active as other years, but, as you know, we have been faced by unusual conditions, and to have come through as we have, is to-day the subject of congratulations. That we should have been able to hold our Convention this year, and include with it an Exhibition of Soil Products, is, I hope you will agree, satisfactory evidence of the interest our Executive and delegates take in the work of the Association.

When the war broke out in August, 1914, we were urged to cancel the Convention which had been arranged for at Penticton, but as some of the money voted for Convention purposes have already been expended, and it was the desire of the Penticton people to hold the meeting, no postponement was made. One hundred and seventy-four registered delegates took part at the Convention, which, while not the high-water mark of actual attendance of the public, is the record for duly qualified delegates.

It has been difficult to finance this year, and in another part of this Report I bring out the fact that were it not for the interest and co-operation of certain individuals, it would have been almost impossible to have held this Convention here to-day, and certainly out of the question to have put on the present Exhibition of Soil Products.

The work of the Association during the past year is dealt with in detail in the Annual Report which will be published, and I do not propose now to take up the time of the meeting discussing it. Several resolutions brought forward at the last Convention have been followed up and dealt with, and any who are particularly interested in the course of these resolutions at the present time can learn of them from the study of the files, which are open for inspection on the small table in the hall.

These resolutions will be found set forth in detail in the Eighth Annual Report (of the Penticton Convention), copies of which were mailed to all delegates early in the year. If anyone desires to refer to them at the present time, there are a limited number of copies on the table by the entrance door. Perhaps of greatest importance to British Columbia delegates is Resolution No. 4.

Resolution No. 4 reads as follows:—

“WHEREAS it is acknowledged that the so-called dry belts of British Columbia are among the most important fruit-growing centres of Western Canada; and

“WHEREAS the development of these districts along horticultural and agricultural lines to the maximum area profitable and at the earliest date is essential; and

"WHEREAS this development depends on an adequate supply of water for irrigation purposes;

"BE IT RESOLVED that it is in public interest that investigations be carried on as speedily as possible, with a view to the Government eventually considering the policy of constructing dams and storage reservoirs, if it is found by such investigations that there is sufficient land reclaimable, as will justify the work, and produce a revenue that will in the course of a reasonable time return the cost of construction and maintenance."

This brought the following letter from the Comptroller of Water Rights, Mr. Young:—

"Yours of April 4th, with enclosed copy of Resolution No. 4 passed at the Penticton Convention of the Western Canada Irrigation Association last summer, to hand.

"The resolution 'That it is in the public interest that investigations be carried on as speedily as possible, etc.,' has to a considerable extent been complied with.

"During the season of 1914 no expense was spared to rush the work of reservoir investigation in the vicinity of Naramata, Summerland, Westbank and Kelowna. This season the work undertaken last year will be completed and will have a direct bearing on the organization of Irrigation Corporations in Naramata, Westbank and Kelowna. At Peachland the first steps towards the organization of an Irrigation Corporation have been taken. The preliminary engineering investigation is now in hand and will cover reservoir possibilities, although there has been in the past no water shortage.

"I am instructed by the Honourable the Minister to say that the policy of constructing dams and storage reservoirs will not be taken up until all information is in hand. In some cases the cost of conservation is out of proportion to the benefits to be received; in others the contrary will be found. It is, therefore, of the highest importance that before coming to a final decision on this point, many streams must be carefully studied and land classifications made to determine to what extent a creek will irrigate land by the development of its reservoir sites."

## INTERNATIONAL IRRIGATION CONGRESS, CALGARY, 1914.

The twenty-first Meeting of the International Irrigation Congress was held for the first time in Canada at Calgary on October 5th to 9th, 1914, inclusive, and was well attended.

Amongst prominent Canadian Irrigationists and Agriculturists, Messrs. F. H. Peters, Dominion Commissioner of Irrigation; the Honourable W. R. Ross, Minister of Lands, British Columbia; Honourable J. A. Lougheed, Senator; William Young, Comptroller of Water Rights, British Columbia; D. W. Hays, Chief Engineer, Southern Alberta Land Company; Robert S. Stockton, Superintendent of Operations and Maintenance, Department of Natural Resources Canadian Pacific Railway, Strathmore; A. F. Mantle, Deputy Minister of Agriculture, Saskatchewan; H. B. Muckleston, Assistant Chief Engineer, Depart

ment of Natural Resources, Canadian Pacific Railway; Dr. J. G. Rutherford, Superintendent of Animal Husbandry, Canadian Pacific Railway; E. F. Drake, Superintendent of Irrigation, Department of the Interior, Ottawa; and J. S. Dennis, Chairman, Board of Control, took part.

The Congress was opened by His Honour G. H. V. Bulyea, Lieutenant-Governor of Alberta, who read telegrams of felicitation from H.R.H. the Duke of Connaught, Governor-General of Canada, and President Woodrow Wilson of the United States.

Members of the Western Canada Irrigation Association will read with interest the commendation given by the Committee on Resolutions to the work of this Association in promoting the development of irrigation in the Western Provinces of Canada, and in the betterment of farm life and conditions generally.

As the report which is being issued by the Dominion Government will carry a very full account of this Congress, I will limit my information to a report of the Committee on Resolutions, which was as follows:—

## REPORT OF THE COMMITTEE ON RESOLUTIONS

Your Committee on Resolutions respectfully report as follows:—

### CONSOLIDATION OF INTERNATIONAL IRRIGATION CONGRESS WITH INTERNATIONAL DRY FARMING CONGRESS.

RESOLVED that we favour the federation of the International Irrigation Congress and the International Dry Farming Congress, and to that end, direct the Board of Governors of this Congress, either as a body or by Sub-committee, to work with a like Committee from the International Dry Farming Congress for the purpose of arranging and planning details for the amalgamation of the two Congresses; the Board of Governors to report its conclusions and recommendations to this Congress at its next session.

### IRRIGATION DISTRICTS

RESOLVED that we recommend the passage by Congress of an Act authorizing the Secretary of the Interior to enter into contracts with irrigation districts created under state law, by which the responsibility and control of each reclamation project arising from the Reclamation Act of June 17th, 1902, may be turned over to an irrigation district organized under said law; and in the case of inter-state projects, we recommend that suitable federal laws be enacted by which inter-state irrigation districts may be formed; and in order that federal projects may be turned over to the landowners, as contemplated by the Reclamation Law, we recommend the careful revision and unification of irrigation district acts by the states of the arid regions, to the end that such projects may be turned over to the control of the settlers through such agency.



## FINANCIAL SAFEGUARDS

RESOLVED that full examination be made by experienced engineers in the employ of the national, state and federal governments in advance of financing the construction of each large irrigation project, and that no such enterprise be entered upon by the government agencies unless it appear that such projects can return at least three per cent. of the total investment for land and construction.

## FEDERAL CONTROL OF INTER-STATE WATERS

We hold that federal control as between those states which are not in full possession of their natural resources is essential to the equitable distribution and utilization of the waters of inter-state streams.

## RIVER REGULATION

We commend the efforts by the United States Congress to create a Board of Regulation, and urge the enactment of suitable laws providing for complete river regulation beginning at the head waters and including forest protection and reservoir construction.

## WELFARE OF SETTLERS UNDER RECLAMATION PROJECTS

We believe the United States Reclamation Service has fully carried out the purpose of the Reclamation Act in so far as the construction of engineering works is concerned. Experience has, however, demonstrated the expediency of extending to the service additional authority to the end that it may promote, at first hand, the welfare of the settler upon the land.

## STREAM GAUGING AND TOPOGRAPHIC SERVICE

We urge the federal governments the necessity for more liberal appropriations for the work of topographic survey and hydrographic stream gauging work; and we urge the stronger co-operation by several states and provinces in asking appropriations for this important work.

## IRRIGATION SECURITIES

We urge that the states of the arid regions assume their proper moral and legal responsibility for the success of the Carey Act Works, and state irrigation districts, and pass such laws as will enable the completion of all meritorious projects now undertaken.

## IMPROVING FARM CONDITIONS.

We recommend that the federal governments empower commissions to investigate and report and make recommendations in relation to the various colonization systems in vogue in other countries, and concerning rural settle-

ment, as well as the methods of national or state co-operative farm banking, credit and marketing systems.

#### FUTURE WORK OF THE CONGRESS

The International Irrigation Congress has been in existence for the past twenty-three years. Its original purpose was to arouse public interest to the end of revising and reforming the irrigation legislation of the Western States, and of inducing the Federal Government to inaugurate a national policy of arid land reclamation. Largely through the efforts of this organization, practically all the Western States and Provinces have enacted irrigation laws based upon sound legal principles and designed to establish irrigation practices which would turn to the best account the land and water resources of the country. The Federal Governments have fully committed themselves to the policy of arid land reclamation, and to the extent to which sound irrigation laws and practices have been established, and important irrigation works have been constructed, the original purpose of the organization has been fulfilled. Therefore, we recommend that this organization now pass on to the more serious consideration of those problems upon the solution of which depend the success of the investor in irrigation enterprises and the happiness and welfare of the settler upon the lands.

#### ACKNOWLEDGMENT

RESOLVED that the sincere thanks and cordial appreciation of this Congress be made known to His Excellency the Lieutenant-Governor of Alberta, G. H. V. Bulyea; to His Honour the Premier of Alberta, Hon. A. L. Sifton; and to His Worship Mayor Sinnott and Aldermanic Council of Calgary, and the citizens of Calgary; to Mr. J. S. Dennis and his able corps of assistants in the Natural Resources Department of the Canadian Pacific Railway Company; to the Board of Control, individually and collectively; also to the Irrigation Congress Chorus, and to Mr. Max Weil, its able conductor; and to the public press.

We commend our distinguished President, Major Richard W. Young, for his leadership and ability and impartial conduct in the Chair; and we commend our Secretary, Mr. Arthur Hooker, for his able services.

We extend the sincere thanks of this Congress to the Dominion Government of Canada, and to the Federal Government of the United States, for the earnest co-operation of their talented experts in the respective departments of the Interior and of Agriculture; and also to the respective provincial governments of Alberta, British Columbia and Saskatchewan.

We commend the splendid work of the Western Canada Irrigation Association in its past eight annual conventions, in promoting the development of irrigation in the western provinces of Canada, and in the betterment of farm life conditions; and we especially commend the Department of Interior and its Irrigation Branch for the appropriations which have made possible the publica-

tion and distribution to the public of the printed proceedings of the various conventions held by this Association.

Respectfully submitted,

(Signed) J. T. HINKLE, *Chairman.*

(Signed) WM. J. THOMPSON, *Secretary.*

TWENTY-SECOND INTERNATIONAL IRRIGATION CONGRESS,  
CALIFORNIA, SEPTEMBER 13th-20th, 1915

At the request of your Secretary, who was unable to attend the International Irrigation Congress held this year in California, Mr. F. H. Peters kindly furnished the following report: Your representatives at the Congress were F. H. Peters and Hugh Muckleston.

"I am submitting to you herewith some notes with reference to the Twenty-second International Irrigation Congress, so that in accordance with your desire, you may send a short report to the Officers of the Western Canada Irrigation Association.

"The feature of the method of carrying on the Congress was 'putting the Congress on wheels' and holding the meetings at several different points. This was a great success and carried out the idea of bringing the Congress into a number of interested communities, and also resulted in the delegates to the Congress gaining a much better idea of the local conditions in the irrigated districts of California than would have been possible under the previous procedure.

"The principal meetings of the Congress were held at Stockton, Fresno and Sacramento, at all of which places one whole day and two evenings were devoted to meetings, while one day was devoted to driving the delegates out through the irrigated districts in the vicinity. At all of these places the local people, usually under the direction of the Local Boards of Control, supplied motor cars to carry the delegates, and in addition to this a very nice feature of the arrangements was that in travelling between the different towns special trains were arranged for, so that all the delegates travelled together. At Fresno, the arrangements had been specially arranged by Mr. A. L. Nares, who is Manager of the large irrigation company operating ditches in the district surrounding Fresno. The trip to Fresno included a motor drive of over one hundred miles and a most interesting visit to some very large reservoir sites that are proposed for the storage of water to allow, in the future, of a great extension of the irrigated districts. A luncheon was served at the company's headgates, and at this place a short informal meeting of the Congress was held in the open air.

"The final meetings of the Congress were held in Festival Hall in the Exposition Grounds at San Francisco, and in travelling from Sacra-



mento to San Francisco a few of the delegates took advantage of a very kind invitation from the Drainage Engineers' Section of the International Engineering Congress and travelled down the Sacramento river in a special steamer, which gave an excellent opportunity of viewing the wonderful delta lands along this river and getting an idea of the dyking reclamation work that has been carried out in the past and is now undergoing considerable improvements.

"At the meetings in San Francisco on the afternoon of September 20th there was an excellent attendance of the delegates, and this was especially pleasing because at other similar meetings which had been held in the Exposition Grounds great difficulty had been found in getting the delegates into the hall on account of the great attraction of the general Exposition.

"The only disappointing feature of the Congress was the lack of interest that was shown in attending the meetings by the local people. This was probably due to the fact that no musical programme or anything of this sort was arranged and probably at future meetings some attention will be given to this point.

"I think attention should be given to the idea which was carried out at Fresno and Sacramento, where sectional meetings were held. This idea appears to the writer to be a very good one because it not only doubles the available speaking time, but also allows of getting together the men who are specially interested in certain subjects and this has the effect of getting out a good deal more discussion on the papers which, in many cases, is the most interesting part of the programme.

"Speaking generally, the Congress was a great success and many excellent papers were read or delivered. The attendance of the delegates was not large, and probably not over one hundred and fifty or one hundred and seventy-five, but all of the delegates who were in attendance appeared to be very much interested in the proceedings and attended the meetings with great regularity. The Congress showed that much earnest work had been done in preparing for it, and if the suggestions made and the resolutions passed are followed up in the future the results will be most far-reaching.

"As indicated in a short report which I sent to you after the first meetings the Congress has made a great reduction in the cost of carrying out its meetings, and this fact, together with the desire which was evident at all the meetings, at all times, have the truth expressed in connection with any subject and face all issues fairly are all thought to be indications of the future policies to be followed by the Congress. In view of the fact that this Congress has recently come under some criticism, it is only fair to say that in the writer's opinion the Congress seems to have risen above these criticisms, and if the same useful meetings are continued there can be no doubt as to the future success and usefulness of the Congress.

"The most important subject that was dealt with by the Congress was that of obtaining adequate financial assistance for farmers who are on the land and the most favoured plan was some system of rural credits. The fact that British Columbia and Saskatchewan have both passed measures which have in view provincial government assistance for the farmers was most favourably commented upon by the American delegates as indicating the progressive spirit in Canada. Another point which did not receive so much attention, but which was very forcibly brought out by one or two prominent men, was that no more extensions of irrigation projects should be undertaken until the projects which have already been put under way have been successfully colonized and put on a sound basis.

"During the whole of the Congress the treatment of the Canadian delegates was given special attention, and the flattering remarks that were made with reference to the Congress held last year in Calgary, together with the great regret that was expressed by the President and other speakers that Mr. J. S. Dennis had not been able to attend, all indicated very strongly the interest which is now being taken by the organization in Canadian irrigation development.

"At the final meetings in San Francisco the Honourable Walter Scott, Premier of Saskatchewan, spoke on behalf of Canada. This was a special honour because the usual call of the states was entirely omitted from the programme, and at the San Francisco meetings only two foreign delegates spoke, the other one being the Chinese Envoy and Plenipotentiary. During the ordinary meetings an interesting but informal address was given by Mr. E. F. Drake, Superintendent of Irrigation, on 'Colonization in Canada,' and the Honourable Alexander Lucas, of British Columbia, delivered a most able address on 'Rural Credits.' Mr. F. H. Peters, Commissioner of Irrigation, delivered an address on 'Irrigation in Alberta and Saskatchewan.'

"The incoming President, Mr. Burgess, appears to have been a very happy choice on the part of the Congress, and no doubt, under his direction, a very successful meeting will be held next year. The indications are that the next meeting place will be at El Paso, Texas, and at the same time ceremonies will be carried out in connection with the opening of the Elephant Butte Dam, which is just being completed by the United States Reclamation Service.

"I trust that these notes that I have made above will meet your purpose.

(Signed) "F. H. PETERS."

# NAKED TRUTH ABOUT IRRIGATION



is not immodest. It deals only with bare facts.

Farmers from Strathmore, Hightingale, Tudor, Standard, Cluny, Bassano, Gleichen, Brooks and other points testify to its value. Their crops endorse it.

Come to the Annual Convention of the Western Canada Irrigation Association at Bassano, November 23, 24 and 25 and learn of these things for yourself. See the exhibit of irrigated products to be displayed there.

You will be welcome.

JOHN S. MAYOR, Chairman  
H. A. TRAVIS, Local Secretary.  
Board of Control, Bassano.

One of the Post Cards used to advertise the Convention.

## OREGON IRRIGATION CONGRESS

Headed by the Hon. Duncan Marshall, Minister of Agriculture for the province of Alberta, and president of the Western Canada Irrigation Association, and including F. H. Peters, Dominion Commissioner of Irrigation, Calgary, a delegation from the Western Canada Irrigation Association attended the Fifth Annual Meeting of the Oregon Irrigation Congress at Portland, January 7th to 9th.

Delegates representing water users from all over the state were present. Oregon was the first state in the Union to ever ask direct appropriation for an irrigation system and voted \$450,000 to construct the Tumalo project, which, it was reported at the Congress, had been completed to the satisfaction of the engineers and interested farmers. All parts of the state clamoured for water on their land at this meeting, but after considerable discussion, it was decided that unless all sank their local needs for the good of the state in general and the greatest possible number, no further help from the Legislature could be expected in this regard. Accordingly, Congress passed a resolution recommending to the state Legislature a tax levy of one-half mill, the proceeds of which, amounting to \$425,000, would be invested in some one irrigation project in the state, the investment to be made on the understanding that the Federal Government at Washington would meet this appropriation with a like sum. Hope was expressed by the meeting that if this plan were carried through it might run on for year after year until the greater part of the state of Oregon, for which water is so necessary, would eventually be supplied with irrigation.



When this resolution came before the local Legislature, however, on February 5th, the total number of votes in favour of the bill was 13; the full 47 remaining votes were registered against it, and when the matter later went before the Federal Government at Washington for the consideration of an appropriation of a like sum for the same purpose, the Federal Government declined to approve it on the grounds that as Oregon was not sufficiently interested to do so they should not be called upon.

The following news telegram was sent out to the Western Canadian Press on the evening of the close of the first day's session:—

"Clamouring for state and federal aid get water on their land, three hundred fifty farmers representing every county Oregon came together today in Fifth Annual Meeting Oregon Irrigation Congress under auspices Portland Commercial Club. All counties are sinking their local needs in uniform demand for aid to benefit greatest possible majority. Oregon is first state in Union make direct appropriation for irrigation systems, with result sixteen other western states pressing their legislature under this precedent. Canadian delegation representing Western Canada Irrigation Association, with whom came Hon. Duncan Marshall, Minister Agriculture, Alberta, warmly welcomed, given prominent places today's, tomorrow's programme. At banquet tendered Irrigationists by business men this city tonight, Hon. Duncan Marshall, chief speaker to supercrowded room, spoke hour half on 'Development Agriculture, Agricultural Education Alberta.' He will again address Congress by special request before leaving tomorrow. F. H. Peters, Commissioner Irrigation Department Interior, Calgary, will also address

## BE GREAT, THEREFOR BE AN IRRIGATOR.

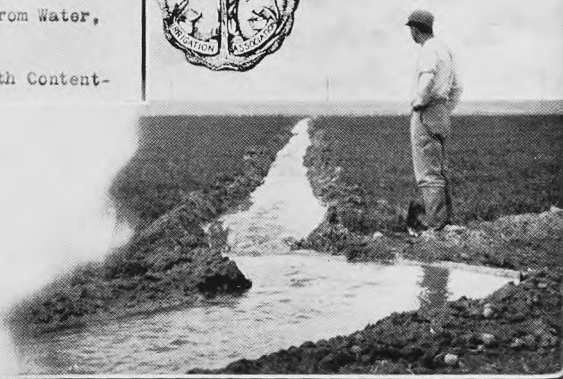
The Greatness of any people depends upon the Prosperity, Health and Contentment of its Rural Population.

Irrigation creates Prosperity from Water, Sunshine and Soil.

Happiness creates Health; Health Contentment and Contentment Greatness. To be Great be an Irrigator.

Attend the Bassano Irrigation Convention, Novr. 23, 24 & 25 and hear what experienced irrigators have to say. You will be welcome.

John S. MAVOR, Chairman  
R. A. TRAVIS, Secy.  
Board of Control.



One of the Post Cards used to advertise the Convention.

on 'Canadian Irrigation Law.' Congress marked by greatest attendance from men on land, co-operation, commercial, industrial, business interests, with general realization that greatest prosperity can only be achieved through assistance rendered farmer and irrigationist. Governor state, Editor 'Portland Oregonian,' President State Agricultural College, other prominent professional business men taking active energetic part in movement."

Hon. Duncan Marshall made two stirring speeches before the delegation on "Agriculture and Agricultural Education in Alberta," while Mr. F. H. Peters spoke briefly along general irrigation lines. The Congress took a standing vote of thanks to the Canadian delegates for their attendance and promised that a delegation from the Oregon Irrigation Congress would attend the 1915 Convention in Western Canada to be held this fall at Bassano.

### THIRD ANNUAL CONVENTION CYPRESS HILLS WATER USERS' ASSOCIATION

The following article, from a local paper, is descriptive of the Third Annual Convention of the Cypress Hills Water Users' Association held at Maple Creek, March 10th and 11th. Your Secretary co-operated with the Secretary of the Cypress Hills Water Users' Association in drawing up a programme for the meeting and in assisting to secure desirable speakers.

"Back to the Land—but don't forget the Water."

"Back to the Land—but don't forget the Water"; in words more or less to this effect, J. S. Dennis, Assistant to the President of the Canadian Pacific Railway, and head of that company's vast irrigation interests in southern Alberta, addressed the delegates to the meeting of the Cypress Hills Water Users' Association gathered at Maple Creek, Saskatchewan, for their Third Annual Convention recently.

Although Alberta is usually looked upon as the centre of irrigation works in the Prairie Provinces of Canada, it should be noted that southwestern Saskatchewan and the Cypress Hills district is an important centre also. Amongst the first irrigation to be done in the West was the employment by the ranchers in the early days, for irrigation purposes, of small streams in these hills, principally for the irrigation of hay and fodder crops, until at the present time there are some 276 small irrigation projects covering an approximate acreage of 65,000. Small reservoirs were constructed and the flood waters stored. This was run over the land and resulted in the production of heavy crops of wild grass. This directed the attention of settlers to the possibility of using water for raising grain, alfalfa, roots and vegetables, and as the interest of irrigators increased through the assistance given to them by the Irrigation Branch of the Department of the Interior, whose head office is at Calgary, the Cypress Hills Water Users' Association was formed and affiliated with the Western Canada Irrigation Association, which has been in existence nearly a decade.

The Third Annual Convention was attended by upwards of one hundred and fifty farmers, many of whom drove in to Maple Creek distances of thirty to fifty miles to listen to the speakers and take part in discussions. The interest in this gathering was shown by the farmers, for the early spring had already begun to break up the roads, and while they came by sleighs from the hill district, when they reached more level lands they were obliged to abandon this mode of conveyance for wheels or horseback.

On the programme were members of the Legislative Assembly of Saskatchewan, representatives of the Irrigation Branch of the Department of the Interior; the Department of Agriculture of Saskatchewan and Alberta; the Canadian Pacific Railway; the Western Canada Irrigation Association and others. Hon. W. R. Motherwell, Minister of Agriculture, dealt largely with summer fallowing, stating that he was pleased to see that at an irrigation meeting, dry land or non-irrigated farming was also a topic of discussion. He told the water users that he intended to make a trip over the Cypress Hills to familiarize himself with the extent of their work, and further, that he would do what he could to arrange a small financial grant to help them through the coming year.

J. S. Dennis let his hearers know that he believes in irrigation. While he recognized the value of dry farming, he said he was firm in the conviction that every acre of land that can be irrigated should be brought under the ditch, as an acre of irrigated land will produce more wealth than an acre of the best dry land on earth. He told the irrigationists that the breaking of land in the district would not diminish the amount of water in the creeks. "True, water would not reach the natural runways so rapidly, but this would be better for the irrigationists as it would insure them a regular supply of water and the waste at flood periods would be reduced."

F. H. Peters, Commissioner of Irrigation for the Dominion Government, in an interesting address illustrated by charts, showed how crop results could be increased by the application of water. He said he assumed that the dry land farmer practised summer fallowing to conserve the moisture, which was a clear indication that he realized the value of moisture. "Why not then," he asks, "when irrigation was available, should the farmer leave one-third or one-half of his land vacant in summer fallowing each alternate year when by employing irrigation on his land he could make the entire unit productive each year?" Referring to the great tracts of irrigated land in southern Alberta and to the Canadian Pacific Railway's Irrigation Block, he expressed surprise that the citizens of Calgary had not expressed more enthusiasm over the possession of such an asset. Were \$20,000,000 invested in any other form of investment, every piece of literature issued by the city of Calgary and Provincial Government would refer enthusiastically to it and every citizen be a walking advertisement for it, for it would eventually place contiguous to the city on the irrigated land, the most intensely settled farming district in Western Canada.

On the evening of the 10th, a special supper was provided the delegates by the Board of Trade, at which Mr. G. R. Marnoch, President of the Lethbridge Board of Trade, outlined in an interesting address how Lethbridge endeavours to co-operate with farmers in the district. Mr. Peters also responded to the toast of our guests.

After the supper all adjourned to the local theatre, where Norman S. Rankin, Secretary of the Western Canada Irrigation Association, gave a talk on the Panama Canal and Panama-Pacific International Exposition, illustrating his lecture with nearly 100 slides. It is believed that western farmers will save six or seven cents a bushel on transportation charges as a result of the canal. Both the banquet and the lecture were given to crowded houses.

The following officers were elected for the ensuing year:—

*Hon-President*—D. J. WYLIE, ROBERT NEEDHAM, WM. PEARCE, HON. WM. MOTHERWELL, R. G. WILLIAMSON and W. HUCKVALE.

*President*—T. A. HARGRAVE, Walsh.

*First Vice-President*—ISAAC STIRLING, Nashlyn.

*Second Vice-President*—JOHN DIXON, Maple Creek.

*Executive*—L. E. RICHARDSON, DAVID KEARNS, GEO. STEWART, A. S. UNSWORTH, DAN DRINAN, J. M. SPANGLER, CLARENCE ARMSTRONG, SPENCER PEARCE, W. A. BURTON.

*Secretary*—G. S. HERRINGER.

R. G. Williamson was chosen as a delegate to Bassano, Western Canada Irrigation Association Convention

R. J. Burley was chosen as representative to St. Paul at meeting of International Waterways Commission.

The next place of meeting was left open.

A number of other men prominent in irrigation and agriculture spoke instructively on various subjects connected with the improvement of agriculture, and resolutions dealing with the sending of a delegation to the International Waterways Commission at St. Paul; the construction of reservoirs by the Government; the establishment of a demonstration farm in the vicinity of Maple Creek; the sending of a delegation to attend the Western Canada Irrigation Association Convention at Bassano this summer, and others were passed.

Honorary President D. J. Wylie, M.L.A., was in the Chair, while President Williamson, Wm. Pearce, F. W. Green, Mayor Redmond and others occupied seats on the platform.

#### INTERNATIONAL WATERWAYS COMMISSION

Relative to the appointment of a delegate from this Association to attend the meeting of the International Joint Commission to look into the matter of the division of the waters of the Milk and St. Mary rivers, about which the executive were written on various occasions and on which their vote to send a representative was taken in April, the executive nominated William Pearce as the Association's representative. Accordingly, Mr. Pearce attended the preliminary meeting held at Winnipeg on May 20th and the official meeting held at St. Paul on the 24th. The following is the report submitted to the executive by Mr. Pearce upon his return.



## REPORT ON SITTING OF INTERNATIONAL WATERWAYS COMMISSION

I left here on Friday, the 21st May, reaching St. Paul on the night of Sunday following, and left St. Paul on Friday, 26th, reaching Calgary on the evening of the 30th. I accompanied Mr. Dennis, Assistant to the President, Canadian Pacific Railway, and Mr. Geo. A. Walker, of the Legal Department Canadian Pacific Railway, to St. Paul. At St. Paul we met the Counsel for the Dominion, Mr. McInnes; Mr. Drake, Superintendent of Irrigation; Mr. Peters, Commissioner of Irrigation; Mr. Burley, of the Irrigation Branch; Mr. John Stocks, of the Department of Public Works for the province of Alberta; Mr. Hunt, formerly Deputy to the Attorney-General, now, I understand, Secretary to the Executive Council of Alberta; and Mr. Mantle, Deputy Minister of Agriculture for Saskatchewan.

The meeting of the Commission was opened at 10.30 on Monday morning in the Federal Building at St. Paul, and it was suggested by the Chairman that as the Commission had some other business on hand which required attention, the representatives of the two countries should meet together and perhaps they could come to an understanding on many points of the controversy. The engineers had been trying to get together and eventually succeeded fairly well in many of the matters of the measurement of water made by the officers of the two countries.

It might be mentioned that Mr. Newell, formerly chief of the Reclamation Service, and Mr. Morris Bien, who is now Legal Adviser to the said Service, a couple of gentlemen of the said Service whose names I cannot at present call to mind, connected with the Reclamation Department in Montana, particularly in the matter of the stream measurements and the recording of old water rights, a Mr. Wyvel, who was Solicitor for the Department of State, and Mr. Sands, who represented the Water Users of the State of Montana, were present. There were some other parties also who were looking after various interests, but beyond those mentioned none took a prominent part in the investigation.

At the meeting of the representatives of the two countries, held at the suggestion of the Chairman of the Commission, no progress was made. The action of those representing the Reclamation Service in the United States would indicate that they thought it was in their interest to let things drift. It was thought probable that the object in view was:—As the Reclamation Service in the United States is being carried out by the Government, the Government could afford to take the risk of all uncertainty of the division of the water under the circumstances, whereas private capital would, of course, necessarily be deterred from taking such risks, and that seemed to be the course of the Reclamation Service all through. Its contention was that the Commission was restricted in the scope of its enquiry, that it was not its province to lay down how the division of the waters of the Milk and St. Mary rivers was to be made between the two countries, but restricted to the measurement of the water that might be required by use from time to time by the various water users of said countries. It will thus be seen that if before the principle of the division of the waters was finally adopted by the Commission, one or other parties had succeeded in absorbing a large amount of such water, it might then be considered, and possibly

successfully contended, as having a vested interest to the amount of its use, even though that amount was more than one-half of the whole of the waters of the two countries.

Another point in the contention of the United States was, that the division of the waters was to be confined wholly to the waters which crossed the international boundary. That all of those streams—of which there is a large number, and whose total amount in volume is very considerable—which rose in Montana and emptied into the Milk river after the said river had flowed out of Alberta, were not to be taken into consideration. The Canadian contention was, that the language of the Treaty referring to the waters of the river means all the waters in the watershed of the stream regardless whether these waters rise in Canada or the United States or flow across the boundary. The contention of the United States was ably combatted at the meeting of the representatives, by the legal representatives of the Dominion Government and of the Canadian Pacific Railway, who were assisted by others, particularly by Mr. Dennis. Mr. Newell, speaking on the lines of the contention made by the Reclamation Service, stated that it was impossible to make a division of the waters, as it was a matter that would vary from day to day owing to climatic and topographical conditions. Mr. Newell stated they had made a study of the proposition, thinking possibly a basis of division could be worked out, but they concluded it was impossible.

The hearing opened on Tuesday and was continued two sessions a day of two or two and a half hours each until the adjournment on Friday evening, when it was practically concluded, nothing left then except to put in certain reports and other exhibits by both parties.

The general witnesses for Canada were Mr. Burley, Mr. Peters and Mr. Drake, each of whom gave evidence at very considerable length, that of Mr. Burley being most important and lengthy. Mr. Dennis gave valuable evidence on points at issue. Mr. Hunt, representing the Alberta Government, and myself, representing the Western Canada Irrigation Association, also gave short evidence. My evidence was to prove to some extent the area that could possibly be irrigated from the waters of the St. Mary, that is assuming we had sufficient of them, and also the quality of such land, and the fact that under the present condition of affairs no private capital could be successfully obtained to prosecute any such enterprise, and therefore it was in the interest of the water users of Alberta to have the division of the water definitely fixed, and the same principle applied to the Cypress Hills water users also. Mr. Hunt gave evidence along similar lines. Of course, he was able to state what the legislation of the last session of the legislature was, giving power to form irrigation districts and borrow money on a bond issue and tax the parties benefiting for the interest and indemnification for said bonds. Mr. Mantle also gave evidence on the same lines as did Mr. Hunt and myself, so far as the water users within the province of Saskatchewan were concerned.

As part of the Canadian case, a tentative scheme of division illustrated by graphs was submitted to the Commission for the purpose of demonstrating how an equal apportionment could be made in accordance with the provisions of the Treaty, and so as to "afford a more beneficial use to each."

Of course the matter of having a considerable representation from Canada there, probably, and I think certainly, strengthened to some extent the Canadian contention. In other words, it demonstrated to the Commission that it was a matter in which a very considerable interest was being taken.

Mr. Newell presented the case very strongly on behalf of the Reclamation Service, and Mr. Bien made an argument also from the legal standpoint. The case as presented by Mr. Wyvell and by Mr. Sands did not impress one as favourably; at least the Canadians felt that a much stronger presentation was made by Mr. MacInnes.

Of course, it is impossible to foresee what the result will be, but in any event I think Canada can feel that she has done about all that reasonably could be done to make a favourable presentation of her case, and also that her case was a most equitable one.

A period of sixty days was fixed by the Commission for the filing of written arguments by any party interested, so that no decision may be looked for before then, and possibly not for some time longer.

Respectfully submitted,

(Signed) WM. PEARCE.

## THE INTERNATIONAL ENGINEERING CONGRESS

At the International Engineering Congress, held in San Francisco September 20th to 25th, the following men, well known to Canadian Irrigationists, spoke:

### IRRIGATION.

Irrigation Enterprise in the United States.—C. E. Grunsky, Dr. Ing, Mem. Am. Soc. C.E., San Francisco, California.

Economic Advisability of Irrigation.—F. H. Newell, Mem. Am. Soc. Mech. Engrs., Prof. Civil Engrs., University of Illinois, Urbana, Illinois.

Distribution Systems, Methods and Appliances in Irrigation.—J. S. Dennis, Asst. to the President, C.P.R., H. B. Muckleston, Mem. Can. Soc. C.E., and R. S. Stockton, Mem. Can. Soc. C.E., Calgary, Alberta, Canada.

The Distribution of Water in Irrigation in Australia.—Elwood Mead, Mem. Am. Soc. C.E., Mem. Inst. C.E., late Chairman State Rivers and Water Supply, Comm. of Victoria, Australia, Berkeley, California.

Mr. H. B. Muckleston, who attended the Congress as your representative, has at your Secretary's request, furnished the following report:

"A great International Exposition to celebrate some historical event is usually made the occasion for all sorts of conventions and congresses, and the P.P.I.E. has not been an exception.

"Of the hundreds of conventions which have been held in San Francisco since the fair opened, none has been more important than the International Engineering Congress, which finished its labours on the 25th of September.

"This Congress is the third of its kind to be held in America, the others being in Chicago in 1893 and St. Louis in 1904.

"It is safe to say that no previous Congress has been more successful in carrying out the work for which it was organized. Of course, the European war robbed the Congress of much of its international character, but a good number of delegates from foreign states were in attendance and the papers were from all countries.

"Following the formal opening ceremonies, and a general session dealing with Panama Canal subjects, the Congress split into sections, each discussing a certain assigned subject.

"Owing to the great mass of matter to be handled, most of the papers were presented in abstract, or in certain cases by title only. Discussion was invited, but as a rule there was little verbal discussion, as those who wished to discuss any paper usually put their remarks in writing.

"The section dealing with waterways and irrigation was probably the best attended of any, with the possible exception of Mechanical Engineering. This section held eight sessions, of which four were devoted to irrigation, at which sixteen papers were presented. Most of the papers were read in abstract, but a few were considered of sufficiently wide interest to be read in full. One of these was a paper by Mr. J. S. Dennis, H. B. Muckleston and R. S. Stockton on Distribution System Methods and Appliances in Irrigation. This paper called out a pretty lively discussion."

Reporting the Congress, Engineering News says:

"It is doubtful if there has ever been in the history of engineering a better symposium of irrigation work than these papers furnish. The number of leading irrigation engineers present at the Congress made the discussions active and profitable. Several of the papers described foreign practice in irrigation, in Italy, Spain and the Argentine Republic. It is noteworthy that the uniform report from all these countries was that the investments in large works for the storage and distribution of water had almost invariably proved unprofitable. The experience in these countries and in the successful irrigation work in Canada and Australia showed that the irrigation farmer must be given financial aid to prepare his land for irrigation or it will be impossible to rapidly colonize irrigation projects with permanent settlers."

Of the other sections, that on Material of Engineering Construction, while not very well attended as a rule, sometimes brought out a good crowd, and a lively discussion for some particular paper. A very interesting paper for the irrigation engineer, especially in Western America, was on the probable and presumptive life of concrete structures. This paper drew out a keen discussion, principally on the effects of alkali water on concrete and the cure or prevention of their effects.

In addition to the technical features, the Congress had its social side. A reception in the Palace Hotel on the opening night, and a banquet on the 24th, were the principal formal events, but in addition there were many informal enter-



tainment for the ladies who accompanied the delegates. There were also a number of excursions to points of technical interest in and around the city.

21st January, 1915.

His Worship Mayor Costello,  
City Hall,  
Calgary.

Dear Sir,—

Re Retail Butchers' Petition.

I am instructed by the President of this Association (The Honourable Duncan Marshall) to energetically protest to the City Council against any increase of the present charge of \$1.00 levied upon farmers retailing meat in the City Market.

I cannot conceive that the City Council would wish to lay a burden on the farmer, who should be encouraged to use the markets of the city, particularly when it is becoming more apparent every day that the successful expansion of this city depends in a large measure upon the development of the farming community in its immediate environment.

Yours truly,

(Signed) NORMAN S. RANKIN, *Secretary*.

January 22nd, 1915.

Norman S. Rankin, Esq.  
Secretary, Western Canada Irrigation Association,  
City.

Dear Sir,—

I beg to acknowledge receipt of your communication of January 21st, relating to the raising of the fee charged butchers, from \$1.00 to \$50.00. As this communication is one which relates to the Legislative Committee of the City Council, I am forwarding it to them for their consideration.

Yours truly,

(Signed) M. C. COSTELLO, *Mayor*.

January 21st, 1915.

Dear Madam,—

Relative to my telephone conversation with you yesterday, I take pleasure in attaching herewith copy of letter which I have this day forwarded to Mayor Costello in the matter of the petition of the local butchers for an increase to \$50.00 of the present annual license made through the Public Market.

If this Association can co-operate with you any further in this matter please let me hear from you.

Yours very truly,

NORMAN S. RANKIN, *Secretary*.

Mrs. Albert Fryling,  
1713, 25th Street West,  
Calgary, Alberta.

Calgary Consumers' League  
1713 Twenty-fifth Street West, Calgary,

January 27th, 1915.

Mr. Norman Rankin, Sec. W.C.I.A., Calgary.

Dear Sir,—

Many thanks for your letter duly received.

We are very glad of your support at this time, and shall remember your kindly attitude if we need your assistance in the future.

Yours sincerely

M. FRYLING,  
 (Signed) p.p. M. E. B.,  
*President, Consumers' League.*

January 21st, 1915.

Dear Sir,—

The attached letter sent to Mayor Costello to-day in protest against the retail butchers' petition for an increase in the market license from \$1.00 to \$50.00 for retailing meat, may be of interest to you and your readers.

You will note that this Association takes up the farmers' side of it only and makes no mention of the increased cost to the consumer that would result if such a petition goes through.

Yours very truly,

NORMAN S. RANKIN, *Secretary.*

W. M. Davidson, Esq.,

Editor, The Morning Albertan,  
 Calgary.

January 30th, 1915.

Dear Sir,—

The Consumers' League and public having been successful in defeating the butchers' demand that the farmer be excluded from the open market by increasing the license fee from \$1.00 to \$50.00, in which result this Association took some small part, I am this morning in receipt of a letter from President Fryling, one paragraph of which says, "We are very glad of your support at this time, and shall remember your kindly attitude if we need your assistance in the future."

I supplied you with clippings regarding this matter before it was settled, and with a further clipping giving the result.

Yours very truly,

NORMAN S. RANKIN, *Secretary.*

To the Executive.

## NEW BUSINESS.

At a meeting of the Executive held in the Palliser Hotel, on October 7th, the matter of the issue of the annual report in separate papers to be sent out periodically to the farmers in place of the present form of report was discussed, Mr. Peters having written the Secretary about this matter on December 22nd, 1913. It was reported by the Secretary that 2,500 of these reports had been published last year, and that there had been a call for 500 additional. Superintendent Drake said this publication cost \$1,400, and pointed out that it had been elaborated upon each year, printed on very fine quality of paper, highly illus-

trated, and that he was of the opinion that it would be a mistake to vary the form to any appreciable extent. The Secretary reported that he had no less than 4,000 names on the mailing list now, and after considerable discussion it was moved by Wm. Young and seconded by A. Chamberlain, that in view of the present financial situation the report be proceeded with in the usual form and that the matter be again discussed next year.

It was moved by Mr. Walter Huckvale and seconded by Mr. Peters, that in order to fall in as much as possible with Mr. Peters' suggestion and to get these individual reports in the hands of the farmers to the greatest possible extent, the Secretary be requested to secure publication of the various papers in the weekly and daily press. CARRIED.

As will be seen by the following correspondence and the clipping books, the matter was duly put into effect.

October 23, 1914.

Dear Mr. Drake,—

I am sending you by express the Eighth Annual Report of the Western Canada Irrigation Association, held at Penticton, which has been edited and is absolutely ready as it stands for the printers. In fact, the copy might be called a "dummy." It consists of 294 pages typewritten matter, which, of course, includes the pages extracted from the Tentative Programme.

Reverting to the subject of our conversation at the luncheon held in the Palliser on October 6th, the papers which were specially desired to be printed separately were those of Dr. Rutherford and Don H. Bark, both of which, however, I can have widely circulated in the weekly press. I already have McMullen's "Live Stock on an Irrigated Farm" running, and hope as it goes on to put the majority of them out in this way. I hope that you will be able to run 3,000 copies this year, and that this may reach your printers at a time when they can devote early attention to it, so that we may get it in the hands of our delegates (1,500) before the New Year.

I take this opportunity to thank you for the telegram sent me from the Dry Farming Congress, which we gave wide circulation to here. Your wire was the first news that had been received in the West of the winning of the Sweepstakes by Canada. For your information I wish to advise that the 1915 Bassano Convention will be held some time between November 15th and December 15th.

I enclose in the parcel also 53 photographs for illustrating the report, and will be obliged if you will choose those which you think best adapted to the report. You will note that Professor Adams has sent nine special photographs to illustrate his lantern talk, which are mounted on special yellow paper.

Yours very truly,

NORMAN S. RANKIN, *Secretary*.

E. F. Drake, Esq.,  
Superintendent of Irrigation,  
Department of the Interior,  
Ottawa, Canada.

Department of the Interior, Canada,  
Irrigation Branch.

Ottawa, January 15, 1915.

Dear Sir,—

I have forwarded to you, separately, 1,300 copies of the address delivered by Mr. Don H. Bark at the Eighth Annual Convention of the Western Canada

Irrigation Association, at Penticton, B.C., in August last, and am enclosing one copy herewith. They will be followed by Mr. S. G. Porter's address on "The Practical Operation of Irrigation Works."

I have retained 200 copies of the pamphlet for other distribution, either directly from this office or through the office of the Commissioner of Irrigation, at Calgary. I trust that you will find the supply sent you sufficient for your purpose.

Yours very truly,

(Signed) E. F. DRAKE, *Superintendent of Irrigation.*

Norman Rankin, Esq.,  
Secretary,  
Western Canada Irrigation Association,  
P.O. Box 1317, Calgary, Alberta.

Department of the Interior, Canada,  
Irrigation Branch.

Ottawa, January 19, 1915.

Dear Sir,—

I have forwarded to you, separately, 1,300 copies of the address delivered by Dr. J. G. Rutherford at the Eighth Annual Convention of the Western Canada Irrigation Association, at Penticton, B.C., in August last, and am enclosing one copy herewith.

I have retained 200 copies of the pamphlet for other distribution, either directly from this office or through the office of the Commission of Irrigation, at Calgary. I trust that you will find the supply sent you sufficient for your purpose.

Yours very truly,

(Signed) E. F. DRAKE, *Superintendent of Irrigation.*

Norman Rankin, Esq.,  
Secretary,  
Western Canada Irrigation Association,  
P.O. Box 1317, Calgary, Alberta.

January 19th, 1915.

Dear Sir,—

I am obliged for your letter of the 15th inst., and for the 1,300 copies of Don H. Bark's address which you have published so neatly.

These are going out at once to 1,300 farmers in the irrigation districts other than delegates of the Association, who will receive this pamphlet as part of the Annual Report. When may I expect the Report, by the way?

Let me express the Association's thanks for your good offices in this matter.

Yours very truly,

NORMAN S. RANKIN, *Secretary.*

E. F. Drake, Esq.  
Superintendent of Irrigation,  
Department of the Interior,  
Ottawa, Ontario.



January 25th, 1915.

Dear Sir,—

I hand you herewith a copy of a pamphlet issued by the Department of the Interior, Irrigation Branch, at Ottawa, containing a speech by Dr. J. G. Rutherford, made before the Eighth Annual Convention of the Western Canada Irrigation Association at Penticton. This address is being sent to 2,500 farmers in the irrigated districts of the province.

This Association is following up this plan by similar action in connection with a speech by Mr. Don H. Bark, of Boise, Idaho, on "The Actual Problem that Confronts the Irrigator," and that of Mr. S. G. Porter on "The Practical Operation of Irrigation Works," and will from time to time repeat it, and in some small measure encourage the irrigator to greater success.

Yours very truly,

NORMAN S. RANKIN, *Secretary*.

Editor, The Herald, Calgary.

Editor, The News-Telegram, Calgary.

Editor, The Albertan, Calgary.

# FINANCIAL STATEMENT WESTERN CANADA IRRIGATION ASSOCIATION, 1914-1915

August 7th, 1914, to November, 1915

## RECEIPTS

1914—Balance carried forward as per bank account.....	\$1,075.84
1915—Dominion Government Grant .....	500.00
Alberta Government Grant .....	500.00
Private Grants:	
Dr. J. G. Rutherford .....	\$500.00
Canadian Development Co. (C. W. Peterson) .....	50.00
George Lane .....	25.00
Dominion Farming Co. (F. W. Crandall) ....	10.00
	<hr/>
	585.00

## EXPENDITURES

1914—Expenses, Transportation, hotels, etc., speakers	
Penticton from U.S. points .....	\$256.45
Stenographic Report and Expenses of all stenographic work .....	245.00
Grant to Secretary .....	200.00
Transportation and Expenses Members of Executive attending International Irrigation Congress at Calgary .....	66.00
Secretary's Salary for 5 months .....	208.30
1915—Printing Letterheads, Official Calls, Badges, Photos, Cuts, Folders, Postcards, Station Hangers, Convention Hall Decorations, etc. ....	543.60
Expense Delegates (3) to Oregon Irrigation Congress, Portland .....	14.66
Secretary's Salary for 10 months .....	416.60
Balance in bank .....	710.23
	<hr/>
	\$2,660.84
	<hr/>
	\$2,660.84

Certified correct,

NORMAN S. RANKIN, *Permanent Secretary*.

NOTE.—No grant was received this year from British Columbia, who have been very generous in the past. The Secretary therefore solicited the private grants above stated. \$250.00 of the balance alone will go to the prize list of the Soil Products Exposition.

## GOVERNMENT GRANTS

The Association is indebted to the Dominion Government for a renewal of their grant of \$500 and to the Alberta Government for the same amount. British Columbia made no grant this year. Dr. J. G. Rutherford, upon request of your Secretary, came forward with \$500. Towards the prize list for the Exposition of Soil Products, donations were made by The Canadian Development Co., \$50; George Lane, \$25; and The Dominion Farming Co., \$10.

The Exposition of Soil Products, while being laid out on the most economical basis, will consume not less than \$500, the prize list alone being \$250. Full details of all expenditures in connection with this exposition will come before the delegates in a subsequent report.

Below is a statement of the cost of the Penticton Convention, which, of course, does not include working expenses for the period between conventions, delegations, office operation, stamps, executive meetings, etc.

Transportation, expenses of 4 speakers, including Secretary and assistant .....	\$322.95
Stenographer's report, including hotel and expenses .....	220.00
Grant expended by Local Board of Control .....	500.00
Printing, Badges, Cuts, Photographs, Engraving, etc., incurred at Calgary .....	269.75
Expenses of two meetings of Programme Committee (4 members) at Sicamous .....	105.70
Total .....	<u>\$1,418.40</u>

The cost of the Kelowna Convention in 1912 was \$1,615.95, and of the Lethbridge Convention the following year \$1,514.64. Of necessity, the cost of the Bassano Convention will be reduced by some \$500.

During the year we lost from our Executive two members who joined the Overseas Forces—Captain J. C. Dufresne, of Penticton, went into camp early in the year, and Mr. Arthur Chamberlain, of Kamloops, joined the Coast Artillery in July: These gentlemen were replaced, the former by Mr. F. Maurice Smith, of Penticton; the latter by Mr. C. E. Lawrence, President of the Farmers' Institute of Kamloops. The Association will follow with interest the work of these two men in the field, and unite in good wishes for their safe return after the war is concluded.

MR. RANKIN: If any person desires any further information on this report I will be glad to submit to them my report on any subject.

CHAIRMAN: We have with us to-day the President of the South Alberta Patriotic Fund, and I believe he desires to say a few words on behalf of that fund.

MR. T. M. TWEEDIE, M.L.A., addressed the Convention on the aims and objects of the South Alberta Patriotic Fund, and set out very clearly the good work being done by that fund.

CHAIRMAN: Now we are going to have a few words from the different provinces represented in this Convention, beginning with the province of British Columbia, we shall have a few words from the Honourable Senator Bostock.

SENATOR BOSTOCK: Your Honour, Mr. Chairman, Ladies and Gentlemen,—When I started out to come to this Convention I came with the idea that I would come as a worker. One who has been irrigating for some twenty-eight or thirty years, but when I got here I was told that the Honourable Mr. Ross was unable to attend and I was asked to say a few words in his stead.

I want to say first that Mr. Ross regrets very much not being able to attend this Convention. He takes a great interest in this province as Minister of Agriculture and also as member for the constituency of Fernie, which is the constituency adjoining Alberta, and he is perhaps more in touch with the irrigation question in this province than others of us. A great deal of the land in our province is of no value unless you irrigate it. It has been said that British Columbia is covered with seas of mountains, but I think people realize that between those seas is land very valuable, and especially where you can put water on it you can raise crops and get very fine returns from it. Those who have been interested in irrigation for a great many years realize that there is always something to learn, and it is a great benefit to people who have studied irrigation to come to this Convention to exchange ideas and get fresh ideas from those who have been carrying out irrigation in other parts of the world.

The part of British Columbia that I came from is on the main line of the Canadian Pacific Railway near Kamloops, and is, I suppose, the part that has been irrigated land for farm purposes for a longer period than any other part of the Dominion of Canada. There is a great quantity of water in that part of the province. The only question is the storage of water in the season it is not required to be put on the land, and carrying off that water for utilizing it when crops most need it. These are most difficult to deal with because in British Columbia we started to record water for the same purpose, as we thought, as for the purpose of mining. The original records of water for irrigation were granted for the purpose of sluicing the ground and getting the gold from the ground, and consequently we got into a system of measuring our water by what is known as miner's inches, and most of the people of British Columbia think of water in miner's inches, but when you come down to deal with the measuring of water for farming purposes you deal with it in the number of feet of water you can put on an acre of land and, therefore, a number of us who have been irrigating for a number of years have had to change our ideas on this subject.

When I first bought my place in British Columbia, I was very much taken with the soil and the climate, and with the fact that it was on the main line of the Canadian Pacific Railway, but I found that as far as irrigation was con-

cerned there was a great deal to be learned and that irrigation was not nearly as easy a subject as I thought when I first started. When I bought the place there was a large number of ditches on it, and it seemed a very easy thing to put water on the land and then to sit down and watch the crops growing, but the first thing I found out afterwards was that although there were lots of water to put on the land, to grow successful crops you have to start in to cultivate it and the less water you use on the land, the bigger the crops and better, and the more cultivation you do, the better it will be in every way, and I found it was not a lazy man's work. The great beauty of being able to irrigate land is that you are certain of a crop every year. If you have the sunshine and can get the water, you are in a position of being certain of your return at the end of the season.

A great deal has been said about dry farming in different parts of the country, and I think the methods of dry farming are very good, and as education in agriculture proceeds, a great number of the methods of dry farming can be applied by the man who is irrigating, but, at the same time, I would prefer being in a district where I can get the water and irrigate the land. Then I would be certain of raising a crop at the end of the season.

I do not want to take up much of your time. It gives me great pleasure to be here, and I will listen with very great interest to the discussions that are carried on. (Applause.)

CHAIRMAN: The next province in order is the province of Alberta, and we will have a few remarks from the representative of this constituency, the Honourable C. R. Mitchell.

HON. C. R. MITCHELL: Your Honour, Mr. President, Ladies and Gentlemen,—I think so far as the province of Alberta is concerned; so far as the speech making is concerned, it has been done justice to already. We have our President, Mr. Marshall, who is Minister of Agriculture and Chairman to-day, and I think by the time this Convention is concluded it is probable that Alberta will have been made pretty well known to the other provinces and visitors from the other side of the line. Consequently, it will not be necessary for me to say very much on this occasion, except by way of welcoming you to the constituency of Bow Valley, which I happen to represent.

I have been travelling up and down the line of the Canadian Pacific Railway for something over fifteen years, and like many other people who have gone over that line from time to time, but particularly in the early days, I have made the remark and wondered when this great stretch of country, two hundred and fifty miles east and west by something like seventy or eighty miles north and south, would be settled. We have all asked ourselves that question, and we have all looked forward to the day when that would be an accomplished fact.

With respect to a very great portion of that area of land, I personally do not think that we can look forward to any very intense settlement unless the object which this Convention has in view, the object of irrigation, can be made a success, and it cannot be made a success unless an organization of this kind takes



hold of and keeps working with that end in view. Personally, I am not acquainted with the methods of irrigation. I only know that irrigation accomplishes great results in a country where a little more moisture is needed than is usually given to it through nature. This is a great province, the province of Alberta, and I think it has more varied conditions of soil and climate than any other individual province in the Dominion of Canada. I once heard a member of the Legislature of the province of Alberta facetiously remark that in northern Alberta the problem was to get the water off the land and in the southern part of the province the problem was to get the water on to the land, and so we can accommodate the man who wants to farm in the ordinary way or the man who wants to go into it scientifically and bend his energies along the lines of irrigation. However, on an occasion of this kind one can only feel that as a result of the labours of this organization as they will put them forward from time to time, they will devote their energies to developing a country that has not been developed. In this constituency of Bow Valley stretching one hundred miles east and west, there are very few townships not yet under settlement. Years ago, when the Canadian Pacific Railway undertook to acquire a certain amount of land of continuous area to carry on a scheme of this kind, the statement was made that with irrigation this country could be made a great centre of population and would blossom forth as the rose. That was some years ago, and though years have gone by, and although the country has blossomed like a rose in spots where water has been put on the land, we are still without our intense settlement. No one is to blame for it. Conditions are such that development with irrigation has been an uphill fight and has been for one of the wealthiest corporations in the country. If it has been an uphill fight for them, some of the farmers must expect to make success slowly, and I am here to create an interest in this work and also to endeavour to create an interest amongst the people of this district in this work, because I believe that we, as public men, must do everything possible to further the interests of irrigation in this country. We know that this country is capable of immense development, but, without irrigation, its progress will be very slow.

I have very much pleasure in coming here to see so many delegates from the country immediately around us, and also from outside points.

I hope your labours will be crowned with success. I hope you will continue to grow year after year in strength and develop the cause of irrigation so that before long we can make more rapid progress in it than has been made in the past. And when I say that, I am casting no reflections on those who have had charge of this work. All honor is due to these men. They have, perhaps, faced more difficulties in the problem of irrigation in this country than any other men have had to contend with. There are those who think irrigation is not the right thing. They say this is not the right climate and you cannot grow grain under irrigation; that irrigation can only be applied to fruit and so on. I have heard many objections and have endeavoured to inform myself from the public press as to the demerits and the merits of the different phases of this work, and I have come to the conclusion after many years of residence in this country, and knowing its climatic conditions as I do, and hearing of the

soil conditions, and seeing what can be done by putting water on the land, and seeing places where water is already on the land, I have come to the conclusion that if we are to have the population and intensified farming which we all hope for, we can only have it by the development of the irrigation idea, and the thanks of the people of this country should be given to those who are working in and out of season for this great cause.

I thank you, Mr. Chairman, for giving me an opportunity of saying a few words at this Convention. (Applause.)

CHAIRMAN: We had hoped to have with us Mr. Motherwell, but he has been detained and has sent us his representative, Mr. Domaile, of his department. You will note from his manner of dress that he has decided to reverse the ordinary nature of things and beat his ploughshare into a sword.

MR. DOMAILE: Your Honour, Mr. Chairman, Ladies and Gentlemen,—I must take exception to what your Chairman has said. I have beat my ploughshare into a sword and have been over there and back again. Unfortunately I have been over there, and I would much sooner face the Germans and German shells than face an audience like this, because, unfortunately, I am still very nervous, extremely nervous, and I wish to state that I am extremely sorry, and the Minister of Agriculture for Saskatchewan is extremely sorry, that he has not been amongst us to talk; he wished me to state his regrets and say that they were having a live stock commission, as we found it very hard to dispose of live stock in Saskatchewan as we wished, and he had promised to be there. He asked me to convey his best wishes and to say he expects and hopes to be with you next year.

I take this opportunity on behalf of myself and the Saskatchewan delegates of thanking the Mayor for his welcome to us to Bassano, and also to Mr. Rankin and the Convention for allowing the Saskatchewan exhibits to be shown. I am afraid I have bothered them a great deal with correspondence.

I know nothing of irrigation outside of watering my back garden with a bucket. I came to learn and am very pleased that Saskatchewan has been able to compete with an exhibit of crops grown under dry farming conditions and comparing them with crops grown under irrigation conditions. At the dry farming convention we achieved some success, and we naturally are proud of it and have been getting sixty bushels of wheat to the acre in Saskatchewan, and it seemed superfluous to irrigate, so we patted ourselves on the back and said irrigation is not necessary. Many people, I think, thought on these lines, but I think a great many thousands of people of the province think that it would be a great advantage to ensure our crops in the dry years. As you know, southern Saskatchewan had a very poor crop last year, but how Saskatchewan is to have water to improve the crops I don't know, as all the streams come from Alberta, and Alberta will most likely take all the water she requires first. However, Saskatchewan has had a great crop this year and is helping the Empire in this time of war when wheat is more useful than men or money perhaps, more important than money, at any rate.

I want to talk a little about the thorn in the flesh. Mr. Motherwell said that he had a loss of twenty-five millions of dollars through weeds. Now that is a conservative estimate. We lost fifty millions through the weeds in the province, and when I am going around there it reminds me of the front. I saw the thistle and tumble weed flying like aeroplanes across the country. I spoke to the farmer about it and I said, "You will have weeds next year." He said, "Oh, no, only a few." I came around the next year and saw them again, and I said, "You will have some weeds." He said, "Oh, no; we will get after them after a while." In four or five years you will find those weeds entrenched there. The sow thistle, the Canadian thistle, and barb wire entanglements of Russian thistle, and you go to the farmers then and he says it is too late. The wild oat is living off the country the same as Germany is living off Belgium. The farmer will not move. He cannot move. They have beaten him and beaten him completely. Looking around it seems impossible to do anything. You had a speaker just now whose subject I very much admired, who cut the ground from under my feet. He referred to the weed problem and as to weed education. It seems to me we ought to get the bankers with us in this matter and the credit men with the farmers, because the educational problem affects everyone. The war taking place in Europe affects every person. The man, the woman and the child. The monied interests are affected. Everyone is affected, and so with the weed problem which faces us in this province, everyone is affected. The weeds in one district have cut down the credit one-half, and everyone will have to enter into this fight and we will have to start. I am glad to see how Alberta has started with rural education, but I am afraid Saskatchewan is behind in this matter, and I hate to admit that Saskatchewan is behind Alberta. Next year we hope to start something definite.

On the other side, I was struck with rural education. The war did not interest me very much, but I was interested in rural conditions. I was never very much on fighting. I remember I picked up a school book in an old school which had been blown to pieces by shells, and there I found a first reader in French, and one sentence which struck me was, "My father has a good horse. His horse is good because his back is short. The horse is good because his feet are sound." Here you begin with a primer and you read what? "The cat is on the mat. The mat is by the fire." (Laughter.) Now I hope we will get over this sort of thing. I took it up with the few people I could interest in these things, and I found I had a set of readers at home. They lead up from the primary reader until in the sixth grade they are doing work that pupils are doing in taking a course in the Saskatchewan University. I just mean that the standard of education is very high in Belgium and you can pick up any book used in a rural school and everything is leading up from agriculture. Here in Saskatchewan they have taken, as far as I could follow, the education that was suitable for the urban population and they have sorted it out and sifted it out and given it to the rural child and removed the child from his surroundings and put him in this town atmosphere and told him that was the breath of life and the only thing that was any good. If we do not get away from it we will have nothing in the home at all. The country is the only place where we can

raise a healthy population. You know if you live in a city for a generation the population dies out.

Over in Saskatchewan, in connection with my particular work, I considered this a national problem. We are giving grants to various associations for different clubs, potato clubs, the clubs for identifying weeds, poultry clubs and clubs connected with domestic science. If a boy has grown half an acre of wheat and off that half acre is produced as much as his father produced on an acre, that boy has learned a lesson he will never forget. On that half an acre a boy has seen a lot of the elimination of weeds, the conservation of moisture and everything that goes to build up a crop, and when he grows up he will take those lessons to heart, and when he is a farmer he will grow these crops I have been talking about, and he will have no weeds, and when we get that class of farmers we will get the farmer that knows how to grow a crop. In Belgium I saw fields that had not been cultivated for eighteen months and barring a little chick weed there were no weeds at all on those fields. The farmers there—their cattle had been driven away, perhaps some of these farms were only a couple of miles from the firing line—and yet they were already planning out what they will do and what crops they will grow. They had everything planned out to go ahead again. Why they planned and how they planned is because they had been educated in the rural school or colleges, your equivalent to collegiate institutes, and have been educated in the agricultural colleges.

Before I close this subject I want to say a few words about something else. The Red Cross has a great many things at the front. Every time you went anywhere you would find the Red Cross, and when I was wounded I think the thing I appreciated most was when a Red Cross nurse came up to me and handed me a cup of tea and I was able to put sugar and milk in my tea. Unless you give what you should give, those things at the front cannot be continued, and when I see a body like this it makes me feel like I did in England where I went around for a month recruiting. They had a poster, in the centre of which was a pond, or slough as we call them, and in the centre of the pond there were two hands raised and you could see that they were the hands of some man sinking under the water for the last time, and in the shallow water was a great, strong, healthy fellow just landing who displayed no sign of any sort of fatigue. That was the so-called "friend" who was deserting the man in the centre of the pond. He was allowing him to sink.

Amongst the audience here there is not a single one of you who would call a creature a man who would let a friend sink or even a person who was not a friend. Many of our fellows have gone to the front, and any of you who are able to enlist and do not are in the same class as the man who will not enlist, and any who will not give his last cent for the man at the front who is doing his best, is in the same category as the man in the poster letting the man sink. (Loud applause.)

CHAIRMAN: I have very much pleasure in now calling upon the man who has had most to do with irrigation in this province. He is also Vice-President of the Irrigation Association, Mr. J. S. Dennis. (Applause.)



MR. DENNIS: Your Honour, Ladies and Gentlemen,—I must first express my pleasure at being able to attend an irrigation convention in Bassano. I have both the pleasure and misfortune of being one of the cranks who must assume responsibility for irrigation in this part of Alberta, and, therefore, it affords me great pleasure to attend a convention in Bassano which is ostensibly called for furthering the introduction of the system of irrigation which is looked upon and by a great many people as the result of the efforts of numerous cranks like myself.

I assume I can say, Mr. Chairman, that we have now got to the stage with the system of irrigation in the southern part of Alberta that we have passed beyond the experimental stage. There is invested in the southern part of the province in works designed to bring water to the land, a sum of \$25,000,000. The Canadian Pacific Railway has invested with this scheme, and in the Lethbridge district, practically \$20,000,000. It is not reasonable to suppose that this amount of money would be invested on the basis of a poker game, although to a great many people it would seem that it was going into a jack pot in which there was not a jack. However, the money is here; the work is here. Now the problem is to get the people and prove that the application of the water to the soil through the principle of irrigation will produce results. It seems in a sense unnecessary at a meeting like this or at any meeting where the subject of irrigation is under discussion, to try to prove that the application of water to the soil is necessary. We are very proud of the wonderful crops produced in Alberta this year and are all very proud of the southern part of the province that it stands at the top in the quantity of the crop it produced.

Why did we produce a crop in Alberta, Saskatchewan and Manitoba? Simply because nature was good enough to associate climate and soil with water and gave us what we got. Without the moisture we could not have had it. Without the snow we could not have had it. Without the soil we could not have had it. But the combination of the three produced it.

It may interest you to know that while irrigation has been introduced into Alberta to ensure a crop every year, never in the history of Alberta have we had in five years a continuous crop. If any of you will go over the Government records you will find that we have never had a continuous period of four years within which there was a sufficient amount of rain to ensure a crop. We have had a series of periods in which you will find two of moisture and three of drought, which is about the average. Within the last seven years we have had four years of sufficient moisture to produce crops, and the introduction of irrigation was simply to overcome the loss of the crop for the one year in five. That is why it was done and what we expect to do in the end, and one of the favourable features is that mistakes have been made and may yet be made. The problem can only be solved at meetings of this kind where people get together and discuss the matter from all standpoints and exchange ideas and endeavour to overcome difficulties which have arisen, and by all putting their shoulders to the wheel to accomplish something. Therefore, it affords me great pleasure to be at a meeting in Bassano called for the purpose of discussing this great problem and endeavouring to find a means by which irrigation can be extended in this

district and ultimately bring about what Mr. Mitchell referred to and which I am now satisfied will come; that this district east of Calgary and comprising this great area more or less unsettled it is true (but when we began to work it was unsettled), but when settled it will become the most densely settled district in Western Canada. I said that some years ago and will go on saying it. Let us see what has happened since I began to pose as a prophet. When we began our work there was absolutely nothing between Calgary and Medicine Hat. I remember when I first started to make surveys for the Government to see if water could be got out of the river. There had been settlers, but they had gone. There was a little settlement at Gleichen. Established why? Not because it was a centre of agriculture, but because the Canadian Pacific Railway had established it as a terminal. That is not a great many years ago as time goes in the development of a new country. It is practically only ten years ago. If you go to Brooks and follow that line west to Calgary or from Gleichen take the trouble to go north or south until you come to Calgary, I claim that you will find something for the foundation of the prophecy I have made, in saying that in time this will be the most closely settled district in Western Canada, and I believed it when I said it first, and I believe it more now. The introduction of irrigation is what did it, and the permanent study of irrigation is what will establish it.

Of course, as I have stated on many occasions, we have had trouble with irrigation and will continue to have it. No great progress was ever made and carried out without trouble. We have tried to meet our troubles in a fair way and they are being met and possibly are gradually reaching a point where all are putting their shoulders to the wheel and working up this great problem together.

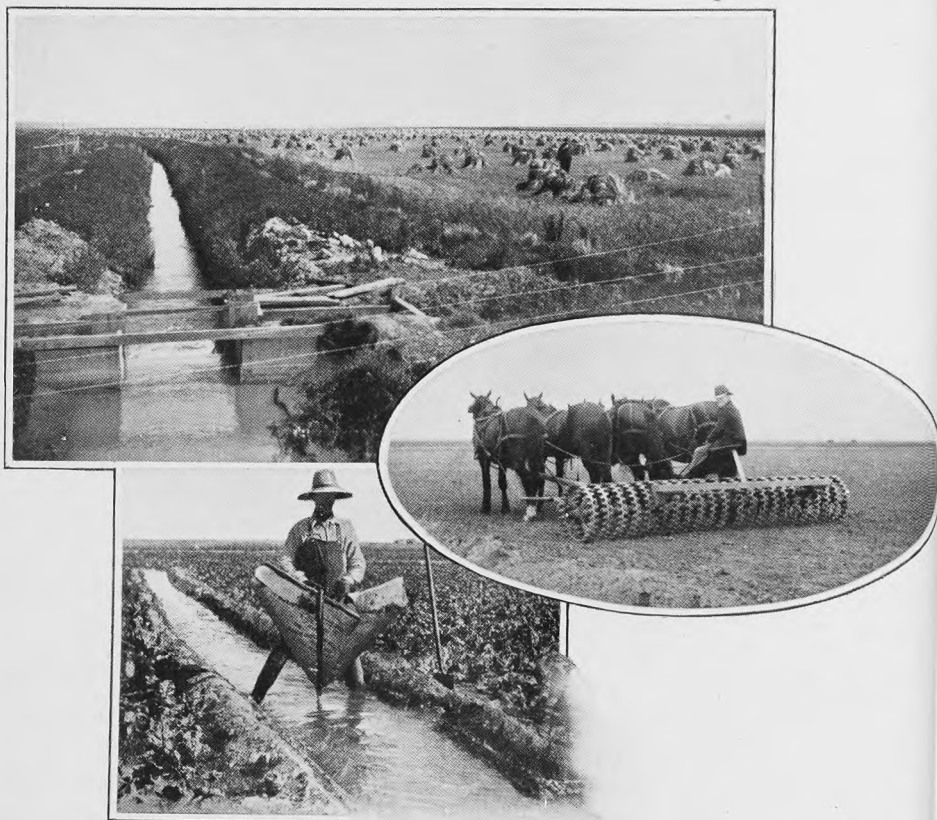
The Minister of Agriculture—our Chairman—has spoken to you of the necessity for more agricultural education or more education along the line of keeping people on the farm. As he properly points out, it is the problem of getting people on the land and keeping them there. It is a problem in which everybody must take a hand. It is a many-sided problem and it is one that is going to require the combined effort of everybody if we are to arrive at a solution. We need more than anything else in Western Canada, and in this province particularly, the people on the land. Remember, I am not speaking of settlers. We have a lot there now. What I mean is we need farmers. I am distinguishing between people who settle on lands to get rich quick and move on, and the man who goes on the land and stays there and brings up children and gives them a taste in their mouth that they want to stay on the land. We are lamentably short of that class of people. We must strive to increase their number. It is a very difficult matter for us to go outside and induce immigration into Western Canada. We have to mark time until this great conflict in this Empire is over. But, we have to lay the foundation which will enable us to go out and invite the people of the world to throw in their lots with us because during this great violence we have done our part in showing what irrigation will do for the country, and also by contributing with men in the fight and doing our share at home in looking after those men and their dependents and creating that condition that we can go out after the violence and say we want you to come and throw in your lot with us in Western Canada, which is not only a crop-pro-

ducing country of grain and cattle and men, but we have also proved is one that no man need be ashamed to say, "I come from Western Canada. I am a man of Western Canada." I hold up to the world that Western Canada has done her share in providing over fifty per cent. of the men that have gone to the front from Canada and by doing her share in the work Mr. Tweedie has spoken of and by providing Red Cross nurses and the means for men who have come back from the front and who have done our share over there, and by doing everything in our means to make us proud that we *are* men of Western Canada. (Loud applause.)

CHAIRMAN: We have on the boundary line of Alberta and Saskatchewan an irrigation association that has done a lot of practical work in irrigation. We have the president of that association with us, and I hope to have a few words from him now.

SECRETARY: Mr. Hargrave is not yet here.

CHAIRMAN: The members of the Resolution Committee are as follows: Messrs. William Pearce, Hargrave, Speakman, Scott and Marshall.



(Upper View) L. N. Lavenden's Farm, Standard. (Centre) Packing on Freiburger's Farm, Gen. (Lower) Irrigating Sugar Beets, Bassano Colony.

The members of the Credential Committee are: Messrs. Fairfield, Brown and Abbott.

There is only one person more troublesome than a book agent, and that is a photographer, and there is one laying in wait for us down in front now. The photograph is to be taken in front of the exhibition building.

SECRETARY: I would just like to announce that all delegates who have not yet registered should register, and those who have standard certificates should present them on the way out. We have a telegraph office in the building if anybody desires to use it; it is here on the left.

CHAIRMAN: The formal opening of the Exposition Hall by His Honour the Lieutenant-Governor will take place immediately upon the adjournment of this meeting. It is only a couple of doors from here. I now declare this meeting adjourned until 2 o'clock this afternoon.

#### AFTERNOON SESSION, NOVEMBER 23, 1915

CHAIRMAN: We have with us the President of the largest organized body of farmers in our province, namely, the President of the United Farmers of Alberta, and I have pleasure in introducing to you Mr. James Speakman.

MR. SPEAKMAN: Mr. Chairman, Ladies and Gentlemen,—You will have to blame your worthy Secretary, Mr. Rankin, for my presence here this afternoon, and especially you have to blame him if any blame does accrue for my being guilty of giving an address.

I have been immensely interested this morning and not only in the meeting but also in private conversations I have already had with several friends that are sitting here; that has somewhat cleared my mind in some matters, and I want to say that it is a difficult matter for a man to preside, as it were, over a big mixed diocese, if I may call it, as Alberta is. All kinds of differences of opinion; all kinds of differences of interests. There is one thing that has grown stronger in me this morning, and that is the conviction that I already had, that in our province irrigation when rightly applied is one of the most important things and one of the best things we can have, and in that respect, as I said to Mr. Dennis a little while ago, I agree with almost every word he said.

At the same time it looks to me, if we want to promote irrigation rightly, we must not ignore difficulties and disputes that have arisen. We will only deal with them rightly by facing them and trying to wipe them out.

One of my biggest worries this year is the irrigation dispute that has arisen in the Gleichen district, and for some of us who have been connected with it. I propose to deal shortly and quietly with it, and as impartially as I can, and in order not to make any rash words of any kind, I have departed from my usual custom, and will read what I have to say on this matter.



Your Secretary at a previous convention complained of the absence of farmers from the convention; he thought that conventions were comparatively a failure when the men practically and vitally interested in the questions discussed were conspicuous by their absence, and I have been trying to discover the reason for this by studying the reports of the previous conventions. It seemed to me that there was a sense of unreality in those conventions. The discussions, apart from questions of legislation, hardly seemed to grapple very closely with irrigation as applicable under the conditions of the irrigation districts in our own country, at any rate so far as Alberta is concerned. I don't want to add to this unreality by delivering a merely ornamental address, and I was very doubtful about speaking here at all. I have no personal experience in irrigating, though during my nearly twenty-five years of farming in Alberta, I have often wished that I could turn water on to my land when the crops were languishing for want of rain. The field we survey at this convention is an immense one. I know very little of British Columbia beyond the fact that in almost every direction conditions there are entirely different from Alberta and Saskatchewan. In Alberta I know a little of the irrigation work in the Lethbridge district, and I have made a considerable study of the matter in the Western Irrigation Block east of Calgary. These are the only districts in which I know anything of the practical working of irrigation. I am struck with the different results in the two districts. In the Gleichen and Strathmore districts there is almost unanimous discouragement and dissatisfaction. In the Lethbridge district there is, so far as I have seen or heard, great confidence, and even enthusiasm. I don't think I have anywhere seen such splendid results in alfalfa, timothy and mixed fodders as around Lethbridge. I think that for rotation of crops of alfalfa, grain and possibly roots, irrigation in the Lethbridge district rightly applied is an assured enrichment of the country. Of course, the basis of it all must be the live stock business.

The shipping out of alfalfa and hay, where the transportation charges are so large in proportion to the value of the goods shipped, seems to me a very wasteful process.

I know that some of my Lethbridge friends are dreaming of very large new irrigation projects. The difficulties that have arisen elsewhere will, of course, cause these new projects to be very carefully scrutinized, but there is one general objection to them which I hear uttered sometimes, with which I don't agree. It is said we have in this immense province innumerable acres of fertile land which will yield good crops without irrigation, let us get them settled first before investing capital in irrigation schemes. That sounds plausible, but there is another side to that question. Immense capital has been invested in railways in districts which as yet are scantily cultivated. If some capital invested in irrigation results in more fully utilizing existing railways, it will be a better paying proposition than to continue spreading out a thin skin of population, calling for new railways in new districts yielding scanty returns.

I come to the question of the difference in results between Lethbridge and Gleichen-Strathmore. The trouble in the Western Irrigation Block is so serious

that I think this convention might well help to find a solution, for certainly this trouble is hindering and casting suspicion on irrigation projects everywhere in Alberta. We may as well dismiss at once the theory that this trouble is caused by a few disgruntled agitators. That is simply untrue. As Mr. Drake pointed out in the Lethbridge convention two years ago, it is a numerous body of water users that is discontented. Nor is it true that the trouble arises from the incompetence of the farmers. There are some incompetent men on these farms, but that is owing, as Prof. Elliott suggested in 1913, to the indiscriminate way in which all kinds of settlers were induced to buy these farms, a number being townspeople from Great Britain who knew nothing even of the simplest forms of farming, and were utterly helpless before the problems of the highly technical irrigation farming. I may say, so that I may not be misunderstood, that I don't want it to be supposed I am casting any slurs on town people from the Old Country. Twenty-five years ago I was one of those greenhorns and I settled on a farm in a place it would be hard to find the equal of in any part of Alberta. I made a success of it even being a green city man, but I would not have tried irrigation farming to commence with. (Laughter.) But these unhappy incompetents were not the only and chief complainers. A number of discontented men are highly competent farmers, many of them with long practical experience in irrigating. In fact, taking the matter broadly, I do not know in Alberta a finer body of farmers than the bulk of the men in the district which I am discussing.

So far as I can see the trouble is this. A very large irrigation and settlement scheme was organized at great expense, in good faith, but with insufficient knowledge. A large number of settlers were brought in by what I must frankly characterize as real estate boosting methods; practical experience soon developed difficulties unforeseen by either side. The first difficulty, perhaps, was the impossibility of getting water on a sufficient scale, and unless I am misinformed, it is agreed that a system of rotation is necessary, not foreseen in the water agreements and inconsistent with their terms. Another new thing was found in the fact that some of the land classed as irrigable turned out to be too uneven in its surface contour for irrigation. This led to a reclassification on the basis that any land that could be levelled at an expense not exceeding \$8.00 per acre should be classed as irrigable. Here was an unforeseen addition to the cost of the land. The farmers who had agreed to pay \$10.00 to \$15.00 per acre extra for irrigable land, and 50 cents per acre per annum, perpetual water rent, on the assurance that they could raise very profitable crops, now found that before they could irrigate, they would have to add another \$8.00 per acre to the price of the land. The next new fact was that much of the land was of such a heavy, impervious nature that it became water-logged, spoiled by alkali and unfit for vegetation, and that the only remedy for this is drainage. Professor Shutt during his last visit has reported the truth of this. The report indicates that a portion of the land in question is of this nature. As to how big a portion this is, I prefer to take the testimony of the farmers who have for years lived on the land. So that on this ground, which is admitted on all sides, the cost of underdrainage would also have to be added to the price of the land if irrigation was to be practised. I

have been studying some reports of the United States Federal Department of Agriculture on this subject. The same difficulties are rapidly developing under irrigation in the States. It is estimated that in the old irrigation districts in the States over 10% of the irrigated lands are already rendered unfit for useful vegetation by water logging and alkali, and so serious has the question become that a special sub-department of drainage engineering for irrigated lands has been created. They furnish very detailed statements concerning drainage and its costs. I should imagine it would cost anywhere from \$30 to \$50 per acre in the district that I am discussing. Here are these two large unforeseen additions to the price of the land under irrigation. Is it fair under such new conditions to insist on the validity of the old contracts, signed in entire ignorance of these facts? I have so far based only on facts admitted all around. When irrigation was attempted it resulted, so far as grain is concerned, mostly in frozen crops. It is contended that this has not been sufficiently tried out. That is fairly open to discussion, but it must be remembered that the farmers bought the farms on the assurance that all these things had been tried out, and that good results were sure. Very few farmers are financially able to carry on experiments year after year. The report on this matter issued a short time ago by the Dominion Government is not very convincing to me as a practical farmer. I agree that the rainfall conditions say nothing against irrigation, often make it desirable. But, in regard to soil conditions and the danger of frost, I think their report is inadequate. I have not time to go into details. But for definite data they base on Lethbridge conditions, which certainly are much more favourable than Gleichen conditions. The report gives very few reliable data for Gleichen, and it is significant that no demonstration farm has been established at Gleichen.

In the Lethbridge convention, Mr. Drake made the following very true statements: "Grants of rights to the use of water under the Dominion Irrigation Act are based upon 'beneficial use.' Water rights are granted only when it is believed that the water can and will be used beneficially." "Irrigation is unquestionably beneficial in districts where the rainfall is insufficient or does not occur in sufficient quantity during the growing season, provided the climate and soil conditions are suitable for crop production and the water can be applied in sufficient quantity and at suitable times. "A very searching investigation is now under way and substantial justice will be done all round." This was all the farmers wanted. They asked first for an expert commission that could hear and sift evidence from all sides. That was turned down. Then they requested that a representative farmer might accompany the government officers in their investigation. That was turned down. The investigation was made without the knowledge or the co-operation of the complaining farmers. I need hardly say that such an investigation could not be satisfactory. Professor Shutt in his recent report emphasizes a fact which a recent visit of mine in the Gleichen district has shown me to be much more serious than I had thought, that is the seepage from the irrigation canals. Already in distances varying from 10 yards to nearly half a mile from the canals, I have seen large patches of land changing to alkaline swamps; soapholes are forming, which on the farms have to be fenced and on the prairies are becoming death traps for cattle and horses.

this is rapidly increasing and in another two or three years, if things go on as at present, there will be thousands of acres spoiled. Dr. Shutt urges as immediate remedy drainage. He does not say whether this also is to be laid on the shoulders of the farmers. I don't know whether drainage is the remedy for this seepage. It seems to call for concreting of the canals.

I have tried to present as fairly as I can a very controversial subject. I am not convinced that irrigation will not yet in some form be shown to be beneficial in the Western Irrigation Block, not, I think, for grain farming on any large scale, but for intensive mixed farming, growing green feed, hay, pasture, alfalfa, the whole based on dairying and live stock raising.

I am delivering this address firstly, in the hope of helping to an honourable peace between the water-sellers and the water-users in the trouble district, and also in the hope by doing this of furthering the cause of irrigation generally. I am under the impression that irrigation during the next twenty years may be a much more vital issue in Alberta and in the other provinces than it has been during the last twenty years.

Taking the province as a whole, the last twenty years have been comparatively moist years. Four or five years before that were dry to a degree that I have never seen equalled since.

A great European scientific authority is telling us that we are just emerging from a comparatively moist cycle of years; that we are now entering into a dry cycle, and that, on the average the next fifteen to twenty years will be comparatively dry years. If that be so, irrigation will be needed more than ever before, and I hope this convention will result in giving irrigation under right conditions a great push forward. (Applause.)

CHAIRMAN: I notice that there is provision on this programme for this address to be followed by discussion. We should be glad to hear from any person in this convention with regard to the matters discussed by Mr. Speakman in his address.

MR. TREGO: I notice in Mr. Speakman's discussion of the matter, he has avoided saying anything about the troubles we have been having in the Gleichen and Strathmore districts on account of his not being a practical irrigator. In this I think he has acted quite wisely, but I would like to point out one of the principal causes and say that it is something that no one is able to see by looking over the country, because it is something that is beneath the surface. It was something that Mr. Dennis was not able to see when they were promoting the system and something we were not able to see when we were looking over the lands to buy them for irrigated farming purposes, and that is the sub-soil. The Government reports refer to the success of irrigation in the Lethbridge district, and in that I think they are quite right, but from what I have been able to see of the Lethbridge district and from what I know of the condition of the sub-soil in the Gleichen and Strathmore districts, there is all the difference in the world in the sub-soils. I do not want to be understood to be the opponent of irrigation. I put in over twenty years in an irrigation district before coming here, and I came to the Gleichen district because it was an



irrigation district. I do not want to farm without irrigation. I have lived so long in a country where we could not produce crops without irrigation that I do not want to go back to the hazardous method of farming without irrigation, but I found that though climatic conditions were very similar yet the difference in the sub-soil made all the difference in the results.

Where I lived we had a gravel sub-soil which let all the surplus moisture go away within a short time. Three things are needed to make irrigation successful. That is soil fertility, moisture and air. It is just as bad to have too much moisture as none. In our district the sub-soil is so dense that once the top soil is filled with moisture, this moisture cannot get away until coming to the surface and evaporating, consequently no matter how lightly we put water into the soil, when rains come later on that we cannot foresee, it carries the grain through into the frosts and we get grain as green feed. The sub-soil was something we could not see, neither could the people who were building the system see, but it is there just the same and makes all the trouble.

Mr. STOCKTON: I would like to say in reference to Mr. Trego, and in replying to the address given by Mr. Speakman, I have been in charge of the Western Section for five years and I agree with Mr. Speakman that we have good farmers in the Gleichen district and throughout the Western Section, and I think it is true that they are not getting the results from their farming that they would have if they had made more use of irrigation and the water which has been ready for them.

There is one great difficulty which these farmers have had to contend with and that is that they have had a much larger area or unit of land to work with than can be handled well under irrigation, particularly in a new district where considerable work has to be done on the land to fit it for irrigation.

During the time I have been in charge of the work there I have had small areas under cultivation and under irrigation. I have nearly two hundred acres now at places where the company has headquarters which have been farmed and irrigated for five years, more or less, and we are getting splendid results from the use of water at these places and that without regard to the sub-soil conditions.

Of course, the problem of irrigating where there is a heavy clay sub-soil is somewhat different to where there is a gravel sub-soil or sandy sub-soil. We have some sandy sub-soils on lands in the Western Section and some clay sub-soils, but no heavier than exists in other successful irrigation districts. Our main problem in the Western Section is to put on the proper amount of water and put it on at the right time. Danger from frost is a real one unless irrigation is applied at the proper time and in proper amounts. A good many of the experiments made by farmers are on land not properly prepared for irrigation, and some have irrigated in the same way they would have in gravel sub-soils where they could put on an enormous amount of water. It is quite possible to put on water in small quantities and evenly if the land has been properly prepared.

In comparing 1914 and 1915 we had practically twice as much rain this year and we had a more favourable season this year than last year so far as

sunshine is concerned, and later frosts this year, and it is quite possible to put on the land water by irrigation, the difference in the rainfall. If a farmer last year had his land in such condition that he could have put on the difference between the rainfall this year and last, he could have gotten equally good crops last year as he did this year, and it is the application of water in irrigation that will produce the results in the Western Section as well as anywhere else where we have the climatic conditions with an average of less than twenty inches of rainfall, and our average is even less.

The matter of seepage and alkali is one that has to be approached in the same way. Because certain lands have been affected by seepage and alkali, that is no reason for saying that the whole country is going to be in the same condition. The topography of the Western Section is somewhat rolling, and under natural conditions seepage and alkali collects at certain spots. That is greatly accentuated in wet years and in certain places it is impossible to get on parts of the farm. This, of course, would not have been the case had it been a drier year. Some of the land in every irrigation project of any size that has been developed, have become water-logged and seeped up. A good deal of that is due to improper irrigation, poor cultivation of the land, and improper preparation. If we could take time to apply irrigation exactly as it should be, we would have no trouble because we would put on exactly the amount of water required to irrigate the crop. But, it is not always possible to do that, and some pieces of land are apt to go bad, but in a rolling country we are protected by the fact that we have the natural drainage to keep extensive areas from going bad, and I feel optimistic enough to say that I do not think but what we have probably reached in many cases the worst conditions, especially as far as the seepage from the ditches have been concerned, because many of the ditches have been carrying water for ten years and it is probable that all the seepage has developed that is going to develop.

I could talk a good deal longer on that subject and quote a good many statistics to show that by irrigating we have got greatly increased grain crops, and also alfalfa and forage crops and have proven that it is possible to raise garden stuffs and increase production from irrigated farming than possible with dry farming and that it is possible to build a home much more quickly and have the home that everybody would like to see with all the variety of products; with trees and grass in the dry years as in the wet years. Thank you. (Applause.)

MR. BUCKLEY: Mr. Stockton's address puts me in mind of a song I heard many years ago, "The greatest deeds we hear of are deeds we never see done," but Mr. Speakman touched a sore spot when he remarked that there was no demonstration farm at Gleichen. The Canadian Pacific Railway Co. did establish a demonstration farm at Gleichen.

MR. DENNIS: No, sir.

MR. BUCKLEY: But it was shut up and the man was moved to Strathmore where he did not do much better on an irrigated farm. Another thing, when this thing was rife, some of the farmers wanted to jump into a law suit with the

Canadian Pacific Railway Company, and my friend here was the principal one to say, "No, don't, the Canadian Pacific will do what is right, don't get into law with them." We waited in vain. Three years ago, the Canadian Pacific Railway fenced in some land close to Gleichen, which is a little worse in character than the general land. It has more gumbo in it. One of the professional experts said he was glad it was there because he could get better results and show the farmers what to get off irrigated soil.

I came six thousand miles because I heard in Ireland what wonderful things could be done here, and our friends came from the United States, and on the representations of the Canadian Pacific Railway they came. That demonstration farm is to-day just as they left it. There is a small quantity of barley and timothy on it, but it is overrun with weeds to-day. I do not think the barley or timothy was ever cut. I wonder that the Weed Inspector does not make them cut it. What did we offer to the Dominion Government and the Canadian Pacific? We said we will divide our farms with you in as many districts as you want. You irrigate half and we will dry farm half and we will do all the work except putting on the water, which you can do to your own taste, and if you get more than we do we will abide by the results and abide by our contracts. Now, I leave that to the gentlemen here if that was not fair. Another offer we said to the Canadian Pacific, double the water tax, leaving the use of water optional and they to advance the water as we want it. Was that fair? If the Canadian Pacific had been fair, would they not impress that on every farmer in that dispute which is over two hundred farmers. They are anxious to pay for their land, but want to do it on an equitable basis.

We came here to spend our lives here and bring up our families and educate them and make our homes here, and I would ask any Canadian Pacific official if I have not made good. Does my home look as if I was going to run away from it? If they can demonstrate to us practically as they offered to do but they have never done it, if they can get results, we want to see it, because we came here to get the best results, and that is why we came here.

MR. TREGO: I came here in 1906, having had experience in Idaho in the United States, and being brought up on an irrigated farm. I came here thoroughly convinced that I wanted an irrigated farm, and I bought one in that district in the year 1908. I commenced irrigating when the first water was turned on that I could use. I irrigated in 1908, 1909, 1910 and 1911, and that has been my last application of water.

The reason I quit is that I put in a patch of timothy hay first and having had experience in irrigation, I wanted to irrigate it. I irrigated one patch three times. As a result of that application of water, one-fourth of the patch was killed as a result of alkali and another patch was little better. I saw that alkali was showing up on my farm wherever it was under water and I knew all that was wanted and I knew all it took was to apply water to the ground and pulverize and dissolve the minerals underneath, and after that would come the alkali by reason of evaporation. On the quarter east of us, I irrigated that in 1910, and where I took off forty bushels in 1908 as a result of that showing in

1910 the Government has taken off twenty acres of alkali as a result of irrigation. We want to be judges of what pieces of ground we shall irrigate. We want to pay for what we use and not for something we cannot put it on. I have spots on my farm I can irrigate and yet on other places I cannot irrigate, and yet I have a lifetime tax placed on my farm and forever. I have fought irrigation in that district on account of this. We have made application to the Head Office and have tried to get things adjusted, but we have been turned down on all considerations. We are here at this convention to see if something cannot be done that we may pay for something we are using and not for what we see. I bought the ground thinking it was good. My friend tells me that if we apply the right amount of water we would have good results, and I know it; but I defy him or any other man to tell me how to know when to apply it, because we do not know how much rain is coming in the future. For instance, in 1910, we did not get water early enough to irrigate. I went and started on eighty acres for the next year. Later in the season I summer fallowed the ground above the ditch and summer fallowed below the ditch. In the spring, I sowed below and above the eight cents. The dry farm above the ditch fetched thirty bushels of wheat per that fetched me twenty-eight cents a bushel in Gleichen. It netted me twenty-eight cents? The dry farm above the ditch fetched thirty bushels of wheat per acre. Part of the wheat graded No. 6 and the remainder was cleaned and sold for eighty cents for seed. What we want is that some of our friends get on the ground and have a demonstration farm in Gleichen. I want to know how to avoid the alkali coming up and I want them now to show me. I have closed my gates down and forbid them to turn a drop of water on my farm as the result of the alkali showing. If they will come and show me what can be done by irrigation I will abide by it. I want a home and I have to pay the water tax because it is cheaper than to move out.

MR. FREYBERGER: I am very thankful I did not get in the Gleichen district if it is as bad as they say it is. I too live out here because it is an irrigated district. I came up to this country for the reason that I could buy irrigated land and I have not anything to say about the conditions in the irrigation district of Gleichen at all. I never stopped there. I have never been there. The only thing I fear in discussions of this kind is, that, it will place a discredit on irrigation in districts in Alberta where irrigation has been proven to be a success. I do not mean to say that it cannot be a success or will not be a success in the Gleichen district for I do not know about it, but it comes to a point where nothing but experience counts and previous experience in irrigation does not count here. I had a little instance happen last year which might perhaps explain some of the cases for failures in the Western Section. You know the tendency in running water is to run it only when you have to. It is laborious to run water. It is hard work and if a man thinks he will get a crop without it, he will not turn it on. Of course I have travelled some in the Western Section and I have yet to see a field where the laterals were made properly and at the proper time. If you wait to make your field laterals until after the grain has come up and you realize it is getting dry and you have waited for rain, you will



destroy part of your grain in making your laterals and I imagine that some of that grain is dead or nearly dead and I explain that because of the instance that happened here. We got water late. Why, it is not necessary for me to say. Some waste water got on some wheat and I did not finish watering the wheat, or in other words I did not water it until about the 20th of June. The wheat was six inches higher than the other. In fact the other was almost dead. I noticed in June patches where the gophers had eaten it off and it looked entirely impossible for it to come up. Consequently the wheat not watered never grew up but took on a second growth and never did mature. I cut the wheat I watered properly and watered twice, and that was the finest field I cut this year which is not bad, and was ripe two or three weeks before I cut it, it got so ripe the wind would thresh it out. I apprehend that the trouble is that they wait too long to apply the water and in place of producing good normal growth they have produced a second growth which is abnormal and there is nothing to it. This year I started in to spoil some wheat. I put in four acres to spoil it. I had heard this discussion and I wanted to see it in my own mind. I heard this about not being able to mature a crop if you watered it in a wet season. I think I seeded about the 20th of April. By that time the moisture had been out of the ground and only about a third of the wheat came up. Along about the 7th or 8th of May I watered it and the big snow came on the 13th of May. That wheat never needed any more irrigation this season because we had ample rainfall, but if it had needed it, I would certainly have watered it. That wheat matured in a less number of days from the time it was planted than the wheat I put in on fall ploughing that I did not irrigate. It ripened more evenly. It made the plumpest wheat I had this year, so I am convinced that water applied at the proper time and in the proper manner will not hinder the ripening of the grain, but will promote the growth of it and consequently hasten the ripening of it. Last year I had an experience with barley. I put it in and watered it and consequently it lay there three weeks and did not germinate. I applied the water on the 20th of May. On the 4th of August I harvested that barley. It was a pretty good crop. I don't know exactly what it made. I am satisfied that irrigating that barley did not hold the ripening at all. I am thoroughly convinced that water applied to grains even in wet years, I mean when there is sufficient moisture, is beneficial to it and will not retard the growth but will hasten maturity. (Applause.)

MR. TREGO: I would just like to ask Mr. Stockton one question. He made the statement that if the right amount of water were applied, that is the difference in the moisture between 1914 and 1915, we would have had the same crop in 1914 as we had in 1915. I would like to ask Mr. Stockton what amount of moisture it is possible to apply on a well prepared grain field with the heat of water that is furnished by the ordinary contract, one cubic foot per second for a quarter section? What quantity of water can be applied to a grain field for proper irrigation?

MR. STOCKTON: It is easy enough to answer Mr. Trego. I would do it in this way. If it is desired to put on a small amount of water with a head of one second foot, it would be necessary if you are going to use flood irrigation, to have the land smooth and the ditches close together. You could, however, by furrow irrigation such as in the state of Washington, irrigate any amount of land you choose with a second foot and put on whatever amount of water is deemed advisable.

In 1915 we had somewhere around seventeen or eighteen inches of rainfall on the Western Section and the year before, half of that, and seven or eight inches of water is about what we ordinarily put on with ordinary flood irrigation, and from the experience that we have had throughout our irrigated fields, I am sure that such an irrigation applied early in the season of 1914 would have produced a good crop and it would have ensured the crop in any event. The year before that we had a very heavy rainfall. In June, at Strathmore, we had seven inches of rain—all in about a week or ten days. We had one or two cases where grain was irrigated before that storm and it showed more beneficial results. It was quite evident, however, from observation of these fields that if it had been irrigated sooner we would have got more benefit. Irrigating after the rain would of course have been of no use, but irrigating before the rain would have prevented the crop from being stunted by drought by the length of time the water was put on, and that is the difficulty of irrigation water in an ordinary year that, if there is a drought of two or three weeks in June which occurs in years even where the total rainfall records would show enough to mature crops, proper irrigation at that particular time would put the crop that much forward to allow the normal crop to be harvested before frost when otherwise there would not be a chance by reason of the drought. The rainfall record at Calgary for the last thirty years shows that for twenty-three years there was less than fifteen inches of rain.

In my observations, I think our maximum crops are going to be produced on ground with a rainfall or irrigation around a total of twenty inches, not only from this year's observations, but from experiments with irrigation. When it comes to raising alfalfa and grass we have a much more beneficial effect than with rainfall. In a year like 1914, when many good fields of alfalfa gave no cutting at all, we can have an especially good crop because the sunshine and heat of a dry year is above normal; whereas, the deficiency of moisture is the only element we lack. Going back to Mr. Trego's question, I would consider it desirable to use more than a second foot, and for the farmers to rotate the use of the head and to use flood irrigation in order to more rapidly and economically flood the ground, and it is hardly necessary to state that the rotation method of the delivery of water is in use in almost all irrigation districts in this country and the United States except in the mountainous districts where there is more water than elsewhere.

MR. TREGO: About how much water would be stored in the land by properly applying it with four or five inches, and also at what time of the year would you advise irrigating it.

MR. STOCKTON: The amount of water you would put into the soil by irrigation or with any moisture, would depend upon the soil itself. The character of the soil and the slope of the land and degree of smoothness with which it had been prepared and quite important upon the closeness at which the ditches were put together. That is, taking flood irrigation, ditches one hundred feet apart, and in the method suggested, you could get over three or four inches of water as was done in irrigated plots at Strathmore in 1914. If ditches were three or four hundred feet apart you would allow the water to run until you got it right across. You might put on two or three times that much water and then again it would depend upon the slope of the soil and how nicely it was smoothed. Those things, of course, in their practical application, must be determined by each farmer from his own experience and from the land he is irrigating and the crop he is raising. Some crops will take out a great deal more moisture from the soil than others. Of course, if the sub-soil is not of too impervious a nature it will act as a relief valve which saves us to a large extent from the evils of over-irrigation, but it is a fact that all water which goes beyond the limit of capillarity, say four or five inches, is lost or returns to some drainage canal, and it is not returned to that farm, but it is putting on too much water and leaving the excess to take care of itself which makes for seepage and alkali. The careful use of water and erring on the light side of irrigation rather than the heavy side will make up for over irrigation by conservation of water. That is very important.

MR. TREGO: You did not say at what time irrigation should be applied.

MR. STOCKTON: That is another thing for which you cannot lay down a general rule. Our climate is the most variable that I have had anything to do with. With spring irrigation for grain there is no doubt in my mind that it is ordinarily best to irrigate pretty early and that depends upon how dry the spring is and other conditions, but in most cases we have been early in putting on the water. There have been too many cases where a farmer has a large area not prepared with ditches beforehand and naturally he hesitates to get out and do some pretty hard work in irrigating the land and thinking the season would be wet enough, he leaves it go to the last minute and then jumps in and does it hastily and does not get the results because he puts on too much water.

There is only one way in which we can get the best results and that is to prepare small acreages, or acreages that can be prepared with great care and properly in every respect, and have irrigation applied just as carefully as any other farm operation is carried on. When we can do that I am sure we will get results by using the same judgment and common sense as to the time of irrigation that we use in the time of planting, harvesting and all other farm operations.

Alfalfa has ordinarily taken to irrigation in all years. This year some has been produced without irrigation and some very well with one irrigation depending upon the drainage and conditions. This is the first year that any field produced any maximum result in grass without irrigation and sometimes it

seems to be best to irrigate in the fall and sometimes in the spring and for alfalfa and other timothy grasses I think early spring irrigation is the best.

MR. TREGO: I would like to have you answer if possible, the question. It is a question we farmers have to know who are going to use the water. You have been here a number of years and should be able to form a pretty good idea as to when we should use irrigation.

MR. STOCKTON: It is not very much good going much further into that. I would say for ordinary and average conditions we should irrigate our grain crops early in June according to conditions, but it is absolutely impossible to lay down a rule which the next season might be an exception to. There is one rule that will always apply and that is that any crop to produce the maximum should have what we might call a certain amount of moisture in the soil from planting to maturity and whenever conditions have reduced soil moisture very much below that amount, it is in order to irrigate unless there is some other commercial or cost condition which influences it. For instance, in this season which has been a wet season so called and in which fine crops have been had without irrigation, I want to say that some of our very good crops as good as any have been upon land irrigated last fall and it is showing that irrigating land for fall crops has not prevented the ripening or maturing of grain crops in such a year as this. So that irrigation did not carry the grain into the frosts, but matured as soon as grain not irrigated. In some cases, this was on summer fallowed land and I agree with you in most cases, the summer fallowed crop will produce good results without irrigation, but in spite of that, irrigation on summer fallowed land did produce good results. For instance, at one of our headquarters, Mr. Robinson had an acre and a quarter of potatoes and he irrigated them carefully and quite copiously in August, and he has matured a very good crop of potatoes, particularly mealy and nice, although raised under irrigation is a so-called wet season, and the crop produced after sorting out frosted and damaged potatoes, was 244 bushels to the acre. And as I say these are particularly good mealy potatoes.

MR. TREGO: How are we going to know in May or June what amount of moisture to apply to the land to produce the proper results. How are we to know what results we are going to get.

MR. DENNIS: Mr. Chairman,—I would not take up the time of the Convention were it not for the fact that this discussion has been introduced by the speech of Mr. Speakman who was invited to speak here as President of the United Farmers of Alberta. However, I think it is quite proper to discuss it at this meeting of the Western Canada Irrigation Association, held in the Canadian Pacific Railway Irrigation Block. I am glad it was introduced in such a reasonable way by Mr. Speakman. I think this discussion should be placed upon a proper basis so that all may thoroughly understand the situation, and although there is a chance that the discussion will take up more time than con-



templated by those who framed the programme, we should thresh this thing out now.

I interjected between Mr. Trego and Mr. Stockton because they can go asking questions of each other for a week as to how much water to put on and how to take it off and Mr. Trego would not be satisfied with all the suggestions Mr. Stockton could give him, and I am quite sure that Mr. Stockton would not be satisfied with the answers Mr. Trego could give him. Therefore I do not think we should attempt to ascertain or settle what water should be applied and how much at a meeting of this kind.

We are invited to discuss the general features of the Canadian Pacific Irrigation Project and as far as I am concerned I am going to take the opportunity to reply to the criticism made by Mr. Speakman. To do so, it is very necessary to give you a short history of this project and incidentally this will contain the foundation for the unsatisfactory results we have met. I do not claim and never have claimed that our results have been entirely satisfactory.

The first idea that irrigation was required in this district was the result of an agitation started in the city of Calgary in 1894. This was brought forcibly to my mind by the Secretary sending me recently a copy of resolution passed by the Calgary Board of Trade in 1894 stating that in their opinion unless irrigation was introduced into southern Alberta everybody might as well move out and everybody in the city go with them. That resolution you will find in the Minutes of the Calgary Board of Trade. The Calgary Board of Trade, other Boards of Trade and resolutions passed at public meetings in the province of Alberta, which was not then a province as you will remember, said that something had to be done to improve conditions on the land by supplying water through irrigation.

In response to this agitation, certain surveys were made by the Dominion Government, with which I was associated, to prove that water could be taken from the Bow river to this district, from the Belly river to the Lethbridge district, and from other streams to other districts. The Government said we will bear the expense of proving, in a general way, that there is the land and the water and that they can be associated. Having done that we will not go any further. We will not go to the expense of constructing irrigation systems in that country but will bear the expense of showing where the water can be gotten from and how to put it on the land.

The first scheme taken up was that in the Lethbridge district. The Government made the original general surveys and the Galt Company undertook to build the canals and colonize the district. The next project taken up was the so-called Bow River scheme, the one which was subsequently taken up and constructed by the Canadian Pacific Railway Company and which is the scheme now under discussion. Before going further, it is necessary to outline briefly how that company became interested in this project.

In 1903, a settlement was being made between the Dominion Government and the Canadian Pacific Railway Company and it was found that the Company were owed some three millions of acres by the Government because under the charter of the railway company when they were given their twenty-five

million acre land grant they had a right to refuse as part of the land grant any land not fairly fit for settlement, and when the line was built (during 1881-1885) this country was absolutely dry and the greatest difficulties were met with in getting water for the construction camps. The railway company, therefore, said they did not want land between Moosejaw and the Rockies, as they did not consider it fit for settlement, and so they took a large portion of their land in the northern part of the province and when the time of final settlement came there was a balance of three million acres of land owing to them. The Government had made the surveys of this Bow River block and the surveys showed that it could be irrigated. The railway said we will take this block in settlement of the balance due us and we will consider the matter of bringing water to the block and irrigating and colonizing that land because you say and the Boards of Trade say that unless water is provided to irrigate the land it is no good, and the Government agreed to do that, and finally in settlement of the land grant, the company were given this three million acres and were also given the surveys of the irrigation system made by the Government.

There was no obligation on the part of the Canadian Pacific Railway to build this irrigation system at all. The Government simply said we have proved the water is there and can be put on the block. If you will take the block we will depart from the usual custom and give it to you *en bloc*, because the company could not take up the scheme on the basis of applying water only to every other section. The company then went to considerable expense in making additional surveys which proved that some of the surveys made under Government supervision and direction were very incomplete, but it was proved that the project was feasible and it was finally decided to begin construction at the western end. I am going to tell you quite frankly that we began there against my conviction because I knew that the soil of the Western Section was heavier than that down here in the Bassano district and a thousand feet higher up than the country here in the Eastern Section, where there is probably a week or ten days better advantage in climate. We had to begin at the western end. If we had not, and had attempted to start here and leave Calgary out in the cold, you can readily understand where we would have been at. For these reasons and for the general development of the country, we began in the Western Section. We began the construction of a system in the Western Section that was estimated to cost a considerable amount of money, and it was a difficult matter to persuade our Executive to let us have that much money. However, the money was granted and we went at it only to find that it was to cost a lot more money to complete than was contemplated.

We finally built the system at a cost of three times as much as we thought it would cost in the first place and then we had to undertake to colonize the land. There was no possibility of going to any irrigated country and saying to the people, there is a large irrigated tract of land up here—come up and colonize it. There has only been isolated emigration from any irrigation district and there has never in the history of the world been any marked emigration from any one irrigation district to another, because irrigation produces prosperous condition of farming and home comforts that people do not wish to leave.

We had to go where we could get people to settle this block, irrespective of whether they knew anything about irrigation or not. We went to the United States to Northern Europe and to Great Britain, and we tried to get every settler we could through the medium of agents who were paid a commission for selling the land.

Mr. Chairman, I want to deal with this whole question on a frank basis. It is a troublesome question at best and one which materially affects the success of this district. There is no use in discussing it in any other way at all. We went out to get the settlers—we went out on the basis of getting them—you know what that means.

I admit frankly that probably certain representations which have not been realized were made by the agents in bringing settlers here. We tried to control these agents when we found them making unreliable statements, but a certain number of people came here expecting conditions which did not exist. I will venture the opinion, however, that 95 per cent of the men on the land in the Western Section, and who are farming there, inspected their land before they bought it. It is true they may have been led to believe that certain results would be obtained by the agents who brought them here and have since been disappointed in getting these results.

This colonization movement was begun in 1907-1908. We had started in 1906. The marked movement of people was in 1907-1908. At that time only a portion of the irrigated district completed was that tributary to Second Canal "A," between Strathmore and Gleichen and the first colonization campaign in the block was at Gleichen. Why? Because it was the best district in the block. It was a fine piece of country, the slopes were easy and it was practically the first district that was colonized and it was soon sold out. We then went on quietly building the irrigation system in the balance of the Western Section, trying to colonize the land.

In 1910, we had a dry year, one of those recurring dry years which are bound to come who have been here a long time, know with absolute certainty will come again. The settlers in the Gleichen district who had come in 1906 to 1908 had made no attempt to irrigate their farms. They had not levelled the land or put in the ditches that are needed to make irrigated farms and were caught without any work having been done to enable them to distribute the water. The water had been brought to the highest point in the district. From that point we had to drop the water into a coulee, although it was bad engineering, necessitated a great want of money. Then it was taken from the bottom end of the coulee and distributed to the district. Carrying the water through the coulee took a large amount of silt from the coulee with it and carried it into the ditches below and when the demand came we were not able to supply the necessary amount of water. We then made that statement over our own signature.

There were some farmers in the district who did not get the amount of water they should have got, and as a consequence there was trouble and complaint and we endeavoured to settle it by writing-off the water rent or making settlements with those who had not obtained their full share of water.

Following that year, we had some wet seasons when irrigation was not so necessary, or thought not to be needed, but we went on and got the larger part of the Western Section colonized until we had sold, in the Western Section, some two hundred thousand acres of irrigated land and a considerable portion of the non-irrigated land, and we had reached the point where we had constructed the system and colonized the land and where we hoped that we would have peace and quietness and success. Instead, we found it was the opposite way.

We found a large number of farmers in the Western Section were dissatisfied. Here are the main grounds of their complaint.

They claimed that while we sold them irrigated land, it was too rough to be irrigated economically; they claimed that applying water to the land brought up alkali, and water logged the land, and where water was applied to grain crops, it retarded the growth and therefore it was later in maturing than crops grown on non-irrigated land and, consequently, it was caught by the frosts. They claimed that the water supply we had contracted to give them under their contract, as approved by the Government, was insufficient. Under the law every contract entered into between the company and a purchaser has to be approved by the Government, and these contracts provided that we were to supply one cubic foot of water, flowing continuously during the irrigation season, for each quarter section. They claimed it was not sufficient—perhaps that is not the right word to use—they claimed they should get a greater head of water. We endeavoured to adjust these complaints, first by undertaking to re-classify the land and to carry out the re-classification as determined by Mr. Stockton and his engineers, and to amend the contracts accordingly. Some accepted, but others said, "No, we won't abide by your re-classification."

Then meetings were held and complaints were filed and abuse was indulged in. I do not hesitate to use that term because some resolutions passed by the farmers in the district, stated I did not know anything about irrigation and never would, and that they had been "flimflammed" to use our western language.

I have tried to give you in a brief way how we reached this point of difference of opinion between a certain number of farmers who purchased irrigable land as to the character of the land, quantity of water, suitability of country for the crops and for irrigation. As we could not agree between ourselves, the farmers then filed a petition with the Government.

In Canada we differ materially in the provisions of the law from districts and in the United States where water is used. Here the law relating to the use of water for irrigation, as contained in the Irrigation Act, is a first class law. It has been so certified to by expert irrigationists in other parts of the world and it has frequently been referred to as such by the International Irrigation Congress. Under our law the full administration of the water is in the hands of the Minister of the Interior. The petitions were prepared as above stated; meetings were held and finally the farmers appointed representatives to meet the Minister in Ottawa and we met them there. After hearing the settlers' side of the case, we made this proposal to the Government,—We will be will-



ing that you appoint a corps of engineers to re-classify the land and that in classifying it they shall apply to the re-classification a basis which is a fairer basis than we used to classify the land in the Western Section, because at that time we had not the money available to make complete contour surveys. Since then we have found that we made some mistakes. We suggested that Government engineers should adopt the basis that we used in the Eastern Section, it being a better basis than we used in classifying lands in the Western Section. However, we said, we will abide by your re-classification. We will say to every farmer, you appealed to the Government—that is the right of appeal under the Irrigation Act—and while we are advised legally that having entered into a contract with us and having signed and accepted that contract, there is no basis on which any purchaser can force us to accept the re-classification we are willing when you notify us of the re-classification to change the farmers' contracts. You can consider the question of soil, alluvium and everything you like. We ask you to say, however, to the farmers that if we are to be bound by your decision they should be bound by it also. That is the basis of all settlements. If we go to arbitration or the courts, it is the same.

In this case the farmers said, "No, we won't do it. We want you to re-classify the land and the Canadian Pacific Railway to be bound by the re-classification but we won't agree to accept it." We said to the Government, alright go ahead but send each purchaser of irrigable land a letter saying that you think they should accept the Government re-classification and send them the agreements and we will sign them. We then asked the Government to send the agreements to the purchasers, pointing out that under their petition and under the powers vested in the department, they were going to re-classify the land and that the Canadian Pacific Railway had agreed to be bound by it and asking the farmer if he would sign it.

The Canadian Pacific Railway signed every one of these agreements before they went out in the mail to the farmers. Some of the farmers did sign but others said, no they would not. The Government has gone on re-classifying the land. We had no representative on the re-classification parties. We were bound by their re-classification. Then why should the farmers have a representative? They appealed to the Minister, and the Minister had appointed the engineering body to classify this land. They sent to the United States and obtained the very best qualified men. They went ahead and completed the re-classification.

When the agitation started for this re-classification there were about fifteen hundred contracts for purchase of irrigated land outstanding; sixteen hundred men who had agreed to buy land with more or less irrigable land on it. I am speaking in general figures. If Mr. Speakman desires it I will give him instructions for him to have the definite figures. Of that number probably four or eight hundred, of the contracts are held by men who bought the land speculatively and who have never been on the land and are not there now. That leaves eight hundred in occupation, and say eight hundred not in occupation and up to date of the eight hundred in occupation, 590 have accepted the th

classification and have changed their contracts and water agreements and said they are going to adopt irrigation and make it a success. That leaves say 210 who have not accepted this re-classification. Of those 210 there are a certain number who have not agreed owing to complications in regard to outside matters, and therefore I take issue with Mr. Speakman's statement that the majority of farmers in the block are dissatisfied, because, as I have shown, of the eight hundred resident farmers who own contracts, 590 have accepted the amended contract and water agreement. That leaves 210 who have not.

That is the whole story, Ladies and Gentlemen. We regret more than I can say the trouble that has arisen. We regret that we have had to resort to the courts in regard to any man who occupies our land in the Western Section. We have only applied to the courts because, after they appealed to the Minister and his officials under the Act, they have refused to accept their rulings. We fortunately live in the British Empire and have that respect for the law which has made the Empire what it is. It is respect for the law and through an enforcement of the law that we are going to decide this question finally and absolutely. (Applause.)

We are doing and have done and are willing to continue to do everything that a corporation can do. I, personally, have undergone all kinds of abuse and criticism for four or five years. If I am one half of what I have been called, it is surprising that I should be at large. Some of the dissatisfied settlers in the Western Section have sent a message to the people of the United States saying, "Don't come to Canada, because it is no place to come to. If you come to the Irrigation Block owned by the Canadian Pacific Railway you can never expect to succeed because we have tried it and have been flim-flammed in every way." That is the message that has been sent out from the Western Section of the Irrigation Block by a percentage of the men who have not signed their amended contracts. I do not propose to argue that any man should be limited in exercising his right to criticize me or the company or the land on which he lives, but having had every opportunity to settle this dispute through us, then by the decision of the minister to whom they appealed, and finally through the courts whose decision will bind him as it binds us, I can only say that it is poor policy on any man's part to foul his own nest by trying to dissuade people from coming here to throw in their lot with us as citizens. If he is right why have two-thirds of the men with equal grievances in his district said that they are satisfied.

The production of crops by irrigation in the Western Section of the Irrigation Block is possibly a contentious matter, but I will state now that there can be produced to-day from the Gleichen district just as many men farming irrigable land who will say that they are satisfied and have had absolutely good results from irrigation every year as men who will say the opposite. I know the men who have done the most in irrigation in the Gleichen district, and their statement is that irrigation is a complete success.

I apologize, Mr. Chairman, for taking so much time in discussing this question, but I do not think there is anything of greater importance to be discussed at the Convention. This is the Western Canada Irrigation Convention, held to

give those interested in these questions an opportunity to present their views and therefore any recommendations of this Association on this subject, on the subject generally of irrigation, will carry more weight than the opinions of the Canadian Pacific Railway Company or any person having a personal interest in this important matter.

This is the first opportunity I have had at a meeting of this kind to discuss this question fully. It was introduced by Mr. Trego at the International Irrigation Congress last fall, but that was not the proper time or place to discuss our dirty linen. It was not proper that it should be stated—that there is a trouble in certain Canadian districts and put on the record of that International Congress, but it is proper here. We are all residents of Western Canada where irrigation is practised. We are all interested in the proper carrying out of the Canadian Pacific Railway project, and we are interested in making it clear, if we are able to do so, that the advantages of irrigation in certain districts in southern Alberta are established. If we have the information to show, let's do it.

If the Convention has anything before it which justifies it in passing resolutions to say that it was a mistake to construct the irrigation system in the Western Section of the Irrigation Block and that the majority of people who live there do not want it and no other people should be allowed to come in and engage in irrigation, let us have these resolutions now. If any man in the Western Section in occupation of land thinks, or has thought during the last few years, that he made a mistake in taking irrigable land, why did he not come forward and say, I made a mistake in buying irrigable land, give me non-irrigable land. We stand ready to-day to change irrigated land for non-irrigated land in that district. But, after spending four and a half millions of dollars in that section to construct the irrigation system, why should we be asked to give a man who paid \$25.00 an acre for irrigable land to be relieved for all time of the water rental on the ground that his land should be non-irrigable land; that is an absolute absurdity because we have for all time to carry water through that farm to supply water on the next farm to the man who wants and believes in irrigation.

I again apologize for taking up so much time, but I think it is only reasonable considering that it is the Canadian Pacific Railway Company's project, the Canadian Pacific's investment, and the Canadian Pacific's efforts in colonizing this land that is under criticism, that the matter should be fully discussed and thoroughly understood.

We have done all we possibly could. We have made mistakes and we will make more mistakes. It is only the man that does not do anything who does not make mistakes. We want to give every man a square deal, though Mr. Trego and some others may think otherwise. They can think that I am a horse thief if they wish, but it is for them to prove it when the proper time comes, and so far as this case is concerned the courts are now going to decide who is right and who is wrong, and no amount of discussion here is going to alter it. (Applause, long.)

MR. TREGO: Mr. Dennis in his talk has gone over the ground very fully and the main thing he seems to find fault with us farmers is, that we do not at

the re-classification from the Government. I would like to ask Mr. Dennis who was it that furnished the basis on which the re-classification was to be made.

MR. DENNIS: The Government said when they undertook to do this re-classification that they were going to do it in accordance with certain rules which Mr. Trego had seen. The Government said, before we go at it we want all the maps and surveys on which you based your classifications and we will see those and go out with our own engineers and classify that land as we see fit.

MR. TREGO: What I meant was the basis that the Government decided on that they would classify everything that can be irrigated with an expenditure of eight dollars an acre, either in levelling your farms or in order to get the water over the surface of the land. Was that not supplied by yourself at the time of the meeting in Ottawa?

MR. DENNIS: No. At the time of the meeting at Ottawa I said that when we classified this land we did not have as much money as we would have liked to expend on it. Therefore, I laid down the basis that all land which lay under the point at which the water could be brought to the land was irrigable. We brought the delivery ditch to the quarter section boundary and all land on a lower level than that was classified as irrigable. When we came to do that in the Eastern Section we found that it was not altogether fair. Certain land might be sold and would cost too much to irrigate, therefore after consideration we adopted the basis that any land that would cost more than eight dollars an acre to level and get in perfect condition to irrigate or to be reached by a flume, should not be included. When we agreed to the re-classification in the Western Section we said we do not ask you to re-classify on the basis originally used in the Western Section but on the basis we used in the Eastern Section, and that was the basis adopted.

MR. TREGO: When our representative returned from Ottawa he gave us this as the basis on which the classification would be carried out, and we said we would not agree to it. Then Mr. Dennis stated the number of farmers who accepted the classification and signed up contracts, and are perfectly satisfied. The first number I think is right, but the last number, where they said they were satisfied and are going ahead to make a success of irrigation is not, for I know a good many farmers who have signed contracts simply to avoid the expense of a lawsuit. Mr. Dennis made the statement that he was satisfied that a great many more farmers could be found in the Gleichen district that were satisfied than those that were not. I am ready to put up a cheque for five hundred dollars cash to get his number of farmers together. We will let the farmers of the district say which side they will join, or if Mr. Dennis wants to get the users of water in the Gleichen district, he can get 99 per cent. of the farmers of that district who will give up their irrigated contracts and take non-irrigable land. I know there are a good many farmers who have signed contracts, but I do not think it is because they are satisfied. I think if it goes to a vote of the people it would go 100 against you.



MR. BUCKLEY: On behalf of myself and farmers in the Gleichen district I would like to make perfectly plain to the meeting that they do not disparage irrigation in its proper place, neither did they send out word that we have been flimflammed, don't come here. We told settlers not to sink too much of their money in their land until they proved it a success, but when they put it to go ahead. We do not find it a success in our district and I think the Government has placed us in the same light Mr. Dennis says we make him. That is the stand we take. We are not running down irrigation in the Lethbridge district. We have heard it is a success. We have heard it is a success in other places, but it is not a success in every district because neither the C.P.R. nor the Government will dare to test it out before our eyes where we can keep tabs on everything that goes on. In fact, I was writing a little time ago to a friend, and he blamed the late Government for inaugurating this scheme and the present Government was easy, and I said the late Government made a mistake and the C.P.R. did also make a mistake and they are now too proud to admit it or take it out.

Another thing we did not say, and that is, that applying water to a crop in our district retarded the growth. I never heard that, but I will tell you what we have heard. It promotes the growth so luxuriantly that it carries the crop into the frost. Last September twelve months, a neighbour of mine concerned in a threshing outfit along with me, was induced to irrigate his grain crop in the month of June—his wheat crop. I had mine in summer fallow. I telephoned up to him in September when I was threshing to know when he wanted the outfit and he said just about Christmas, and he said, "Why, have you not done cutting?" and he said, "No! I have not started. My wheat was in Fort William when he had just started cutting. This is one of the men that the C.P.R. quote as being a successful irrigator. Another one they quote is in their employ, and he put his photograph in the papers and told us about the wonderful crop he had. His wheat went to the elevator and he had 35 per cent. of weeds in it when it was cleaned. I believe he has gone since to manage a farm for a big English syndicate. I hope he will succeed. One thing has troubled us in the Gleichen district and that is we have heard many reports of successful irrigators but we could never find their location so that we can go to see them. One man who was posing it a year, and his name was in print, sold two carloads of seed wheat to a seed merchant and the seed merchant thought it was so good he got it all. When he came to deliver it he could not make it up although the threshers say they got it in the bins. We want to see the thing demonstrated. We do not want to be deceived. That is the very thing we are up against. You cannot stand up against them. They are a big corporation. They are the Government. Mr. Dennis spoke in a very determined manner and we are prepared to do the same and are willing to take our bundle on our shoulder until we do get fair play, although 25 per cent of mine is sunk in that and some of what is borrowed.

Now, gentlemen, I would not for the life of me say anything that would reflect on anybody, neither would I say anything offensive to anybody and I hope anything I say will not be taken personally. I might say that what

would have preferred above all others is for the Government to take a small plot, an average plot, and test it and farm it and we would do all the work except put the water on. We want a perfectly fair deal and that is all we want.

We are living in the best country the sun shines on but if we could get it demonstrated before us and have it demonstrated before our eyes, why, we are ready to put our shoulders to the wheels as Mr. Dennis has said and he will admit that some of us have put our shoulders to the wheels and made a success of farming without irrigation, but we want to get the best out of it.

MR. FREYBERGER: I have only a few words to say. Last spring a man came by my place. He was homesteading across the river. He owns a farm up at Gleichen. I can get his name if it is necessary, and he asked me what I thought about irrigation and I told him, and he told me where he lived and farmed and he stated that last year, the dry year, he lost a thousand dollars in oats by not irrigating. I said, "How did you reach that conclusion?" He said, "I was irrigating some trees and the waste water ran down to these oats, and taking the difference between these oats and the other oats in the same field and estimating the price of the balance of the field where the oats were, was a thousand dollars." I said, "You bought it, why don't you use it?" He said, "We are not using water in our district," but he said, "I am not going to do it that way any more." That is so much for that.

Now one word about sending word to the States. I believe I can produce files of the Denver Post with articles written by a gentleman who spoke who signed his name as being Secretary of the United Farmers of Alberta, in which he made the most derogatory statements about irrigation that could be made, and advised the people not to come, and further than that he said "The district I moved from laid right alongside this district," and he had moved; consequently if his was a failure, ours would be too. I believe I can produce the files.

MR. DENNIS: I can produce forty of such articles.

MR. FREYBERGER: I believe they have done their best to keep the experienced irrigator out of this country and they are doing an injury to irrigation. If the Gleichen district is poor I don't know about that—I am not saying it is, but I do object to them casting reflections on every district in the province of Alberta where people are successfully applying irrigation and are satisfied. (Applause.)

CHAIRMAN: I think we have gone on as far as it is necessary as no person has moved a resolution. I suppose no person expected to move a resolution as this is a meeting for three provinces and this is a problem peculiar to Alberta alone. The next speaker on the programme is Mr. I. D. O'Donnell, but he is absent and I have a letter from his secretary in which he states that business in Denver has prevented him from coming here.

MR. PEARCE: I would like to announce first, that Mr. Lawrence has been appointed Secretary of the Committee on Resolutions and if you have any



Alfalfa and Irrigation on Pattin's Farm, Bassano, Alta.

resolutions with respect to any matter to be brought up before this Convention. I would ask that you kindly hand your resolution to Mr. Lawrence, who will be dealt with by the Committee.

The next speaker will, therefore, be Mr. Howes, the Dean of the University of Alberta, Faculty of Agriculture.

### AGRICULTURAL EDUCATION IN ALBERTA

MR. HOWES: In beginning an address of this kind one is expected to say something conventional, and I shall be no exception to the rule. I am glad to have this opportunity of appearing before you and of becoming acquainted with those gathered here. Although this is conventional in form and sound, I would like you to know that the feeling behind it is deep. I look upon it as a real privilege, that I am given the opportunity to present to so progressive a body of men my ideas upon a subject so important to Alberta, upon which I have spent some years of study and work, and to which I hope to devote my remaining years allotted to me. As Dean of the Faculty of Agriculture at the University of Alberta, it becomes my duty to keep the subject of Agriculture

Education before the people and to use every opportunity to further the cause. Therefore, I welcome this as my first chance to speak in an official capacity for that great profession of agriculture. I have only one regret, and you will share this with me before I am through, and that is, because I am unable to present so important a subject in the best manner possible. Our philosophic friend Dooley classifies public speakers as follows: "The man who has something to say, but not all the words he could wish to say it with, may get along fairly well; the man with something to say and the right words to say it with makes a great speech; the man who has nothing to say and a torrent of words to say it with—that man's an orator." According to Dooley's classification then I can only hope to rank among those who "may do fairly well."

A young province or state shaping her scheme of education is in an interesting and advantageous position. If she will maintain lofty and practical ideals and if she be willing to profit by the successes and mistakes of older states she may build broad and firm a foundation for the education of her children that time shall not put to shame. Then, too, she may, by a study of the successes and mistakes of older states, accomplish in a few short years, or even months, what it has taken the older states many long years to accomplish. Alberta stands in that interesting and advantageous position to-day, and it is my purpose in connection with comment on education in general and particularly agricultural education, to outline for your consideration what Alberta has accomplished to date in the scheme to educate for the profession of agriculture. This outline is intended to be descriptive rather than eulogistic, to lay before you what has been done and to give reasons for it, rather than to boost the work of any man, institution or party. There may be better schemes and no doubt time will modify plans now in operation, but such as they are I shall lay them before you, asking your friendly criticism and assistance.

For the purpose of systematic discussion I have divided my subject as follows:

- Agricultural Education in the Public School.
- Agricultural Education in the High School.
- Agricultural Education in the Schools of Agriculture.
- Agricultural Education in the University of Alberta.
- Agricultural Education for the Adult.

What has Alberta done? Profiting by the experience of older provinces, Alberta early sought to make agriculture an integral and important part of the school course. An experienced committee drew up a course of study in agriculture that is second to none I have ever seen. But a course was not enough. A text book was prepared, based on the course drawn up, and written to suit western conditions. I refer to the book written by Mr. J. McCaig, just published, a book that most of you who have read it will agree with me is in a class by itself as regards diction, arrangement and illustration. But a course and its text book is not enough; the teachers must have special training and that training we have been trying to give them in the summer session for teachers at the university each year. Two years ago the attendance of teachers was 80,



last year 155, this year over 300. In addition to courses for teachers there has been given a course to inspectors. I may say that I was requested this summer by four clergymen to use my influence to have put on a course for clergymen—this speaks well for Alberta, for her agriculture and for her clergymen.

Perhaps you ask, "why should agriculture be taught in the Public schools? If so, I feel like exercising an Irishman's privilege by asking "Why not? However, I shall advance two reasons and if you can dispose of these you have taken away most of the spirit of justification for the faith that is in me.

First, agriculture should have a place in the Public school because that is the logical place to begin education of any kind. It is not the sum-total of agricultural facts that the child can learn there that count; it is the bent of mind induced. Train him to think of things agricultural at that age and when he is older he will not depart from them; when he is older he will not, as perhaps his father does now, hang the agricultural bulletin—the production of much labour and research—beside the kitchen window to be used for shaving paper. No agricultural educational system can be a success unless it begins with the child. With the exception of a few of us, boys who are perennially young, who happily have kept alive some boyhood ideals, most adults are past redemption. The hope of the country is in its young people and healthy progress rests with them. Let us see that our children are able to do a little better than we have done.

My second reason is that it is largely education in things agricultural that can check the abnormal drift to the cities. Thank goodness the day is passing when it is thought proper to keep the dough-head on the farm and send the smart brother to school. Of all professions, agriculture makes the greatest call upon all the fundamental sciences and it takes brains to make a farmer. Therefore, this abnormal drift of bright boys and girls to the cities is to be deplored. I would like to submit to you the idea that this regrettable exodus is caused by the feeling—too long prevalent under our old educational systems—that to rise in the world the boy must leave the farm. Why should he think otherwise? If he respected his teacher he must feel that farming and education were things entirely apart. On the other hand, if he sees the profession of his father recognized as a major on his educational course, he is bound to feel for it a proportionate respect. Agricultural education will not bring back the boys and the girls who have gone, for the bright lights get them; they will never come back until a diet of husks drives them back to see how chances are for the fat calf. But we can keep a proper number of the children on the land if we educate them properly and the Public school teacher should begin the work. Of course, reasonable work hours, and proper diversion and recreation are not to be neglected if we study to hold the children on the land.

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If agriculture in the Public school is important, we would be justified in one sense in saying that agriculture in the High school is doubly important. It is perhaps more than ever necessary that the child should see the profession of his parents recognized as worthy of an important position in his course of study.

that he should feel that agriculture, that science or combination of sciences pertaining to the home life he has just left, has come into its own dignity of position, and that he is not necessarily improving himself by forsaking the farm. This, however, is just mentioned in passing, because after all it is but a reiteration of the argument advanced in favour of placing agriculture in the Public school. There is another, a very weighty reason for the recognition of agriculture in the High school. We look to the High school to furnish us all our teachers for the Public schools. Practically all our High schools are found amid town conditions; indeed many of them are town-bred as well. Then, after a short time at a Normal school, also amid town conditions, they begin their teaching in a rural district; they are turned loose upon an unoffending rural community; it is not fair to the community and certainly it is not fair to the teachers. It is therefore not only advisable but absolutely necessary, that these young would-be teachers receive an adequate measure of agricultural teaching, that shall send them out to their work armed with the sympathy that comes with understanding. That so many of the young teachers, mostly girls, have succeeded, speaks strongly for the personality of the teacher body of Alberta.

Alberta is meeting the call for agricultural instruction in the High schools. A course of study is drawn up and in the absence of a text book, a syllabus or amplification of that course of study has been printed. A course for agriculture for High school teachers was put on at the university and this was one of the most satisfactory courses yet given. About forty High school teachers in the High schools in Alberta took advantage of it, and I wish here to speak a word in acknowledgment of the high calibre of the teachers in the High schools in Alberta. In addition to lectures and indoor laboratory periods, an attempt is being made to introduce an outdoor laboratory course. I would advocate a series of experimental and demonstration plots; plots where many kinds and varieties of economic crops could be grown; plots where annual crops could be grown; plots where simple soil and plant experiments may be carried on. I guarantee that the High school boys and girls will get from this course alone that which will send them out to the work of teaching feeling more fit, send them out armed with the sympathy that comes with understanding.

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So much for agriculture as part of the regular school curriculum. I should now like to speak of special forms of agricultural instructions.

You have all heard of the three schools of agriculture established at Vermilion, Olds and Claresholm. I wonder how many of you have visited one of these schools and seen the very practical nature of the work put on there. Be it known at the outset, that these schools are first of all and most of the time for boys and girls who expect to return to the farm to become the country home-makers of the future. When the two-year course was drawn up, it was aimed to give as closely as possible the work given during the first two years at Guelph, Manitoba or Wisconsin. Inasmuch as the terms were only five months

in length, the slack period of our western year, and as there would be fewer instructors in such a school, part of the regular college work was weeded out. A very practical course in Field Husbandry, Animal Husbandry and Farm Mechanics for the boys and Household Science for the girls was drawn up. A certain amount of science work was given and as much time as possible devoted to English and mathematics. These schools have been in operation two years and appear to be just what the people want. The total attendance during the first year was 268, and last year, despite adverse conditions, the attendance was 327. This year it would appear that the schools are filled to capacity; indeed one of them has been obliged to transfer applications. This I take it is a proof as to whether these schools are successful.

You will be interested to know the kind of student attending these schools. Well, they range in age from 15 to 30 and in educational standing from Grade I. to Grade XI. At present a large number have not been at school for some time. They left older districts before they had time to get much schooling, and since they came to Alberta they have not had much time to go to school. Now they are too big to enter the grades to which they must be assigned in the regular school work, and they have welcomed these schools of agriculture as a fine chance to get education otherwise denied them. At the end of the two years all who have satisfactorily completed the course receive a diploma, and those who take a standing sufficiently high are given a pass that entitles them to enter the Faculty of Agriculture at the University of Alberta. It is fair to suppose that the next few years will show a marked progress in attendance at these schools of agriculture. Already there is justification for building more of such schools. I believe the attendance in Household Science will increase as times get better. I believe we shall have a better educated lot of girls and boys entering these schools, because the comparatively uneducated class, just mentioned, represent a class caused by pioneer conditions, and one that is passing, and because the schoolhouse has found its way into every settled part of our province.

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At the University of Alberta the Faculty of Agriculture has been established this year. A three-year course continuous with the two-year course in the schools is contemplated, making in all five years to secure a degree in agriculture, the B.S.A. degree. During the first year of the university course it is aimed to give a good grounding in Science, English and Mathematics, accompanied by enough Field Husbandry and Animal Husbandry to keep the boys up and fresh in this work. Then in the last two years full attention will be given to specialized practical work. Details of the course for this year have been worked out; details of the work for the succeeding years will be worked out later. As the Faculty is newly established it is perhaps premature to tell what we are going to do. I prefer to do something before I talk about it. However there are some things I feel it my duty to tell here. We believe that the schools of agriculture scattered about the province will serve many more students than would a central institution alone. None the less a central institution is needed.

sary to standardize the work and to give further education to those who are able to get it. The work at the schools followed by the work at the university should turn out a good practical student. In attendance at the Faculty of Agriculture we can never hope to compete with agricultural colleges of other provinces in numbers of students; but in numbers attending both schools and university we will soon be beyond any of them if we are not past them already. At the university, however, we are going to strive to excel in quality rather than in quantity, so that in the future it will be a distinct asset to any boy to say he obtained his degree in agriculture in Alberta. We want to get a staff of first-class instructors, the best is none too good. It might not be out of place here to mention some points which we hope to emphasize.

The course at the university is to be just as practical as we can make it and based on the fundamental sciences.

In a live stock province, where the slogan is "mixed farming," Animal Husbandry must be our leading course. Our boys must get a thorough grounding in feeds and feeding of live stock, in breeds and breeding of live stock, and also, they must have a good practical grasp of Veterinary Science so that our graduates can get out and do things, not talk about them.

I have in mind next that our graduates shall know how to teach. Heretofore agricultural graduates have been turned out to teach agriculture without sufficient training in the science of teaching, and these will bear me out when I say that the graduate in agriculture should know how to teach just as much as the graduate in any other line. Think of the absurdity of sending out graduates in agriculture, without any knowledge of the principles of teaching, to work along with men who have had that training. Our boys must have the training that shall fit them to teach anywhere. If they do not teach, the training is good for them, if only when their own kiddies start to school, and it should fit them to make good school trustees.

Our graduates in agriculture should have a good standing in English, i.e., in reading, in composition, in agricultural journalism and above all in public speaking. In this connection reference is not made to training in oratory and in elocution, nor to the general conception of a public speaker. Our boys, who must go out as pathfinders in their work, whether on the farm or in the office, are distinctly handicapped in that they must early face audiences of people so much older and wiser than themselves and so much depends upon the impression they make. They should then have training in standing up and in simple straightforward manner and language saying what they have to say, and then knowing when to sit down. I never had that training.

We must emphasize, more strongly than ever, co-operative production and better markets. This calls for a course in scientific farm management and in rural economics. We have talked better production for a long time; along with this let us now see if we cannot develop in the direction of better disposal of the products.

One last thought in connection with the Faculty of Agriculture. Too long, and often with ample justification, it has been said that agricultural education weans the boys away from the farm. No doubt many of the boys who



come to us will go out to take official positions or to enter upon the work of teaching. Also, we hope that many will leave us to put into direct practice what they have learned. Our ideal is to send as many boys back to the farm as there are boys who have farms to go to. A great deal depends on the spirit in which the education of the boy is handled. I wish to record here an axiom—a proverb—that education never hurt the right kind of a man. You may tell me of college graduates who have made poor farmers; well, I will tell you of college graduates who have made splendid farmers. The poor ones would never have been successful anyway, and probably they did better with their training than they would without it. Mark this, the day is at hand when greenness and farming will have no more connection in the popular mind than verdancy and real estate business. Sophistication is apt to follow the automobile, and most of the autos are going on the farm. Less and less is the farmer becoming a party to that system of segregation that has so long been responsible for lack of recognition of the dignity of the agricultural profession.

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When I come to the question of education for adults I am approaching debatable ground. Frankly, I am of the opinion that the adult who can be educated far in agriculture is just about as scarce as the adult who can be educated far in law. A few of us may have been fortunate in being able to maintain some ideals from boyhood days, when a moon shone on every telegraph pole, but for the most part we, who have topped the hill and are jogging down the sunset trail, have our habits of thought and action pretty well fixed. We enjoy Farmers' Institutes, Short Course Schools, Demonstration Trains, Seed Fairs and such, because they brighten us up a bit and give us something to talk about; but we would hesitate to admit that the best service performed by these institutions is in the number of lads they interest and entice away in search of further agricultural instruction. Yes, it is hard to modify the practice of adults, but there is one way to reach many of them, and that is through their children. Many a farmer has gone against his own judgment to give his boy an opportunity to work out an idea perhaps learned at college. My own idea is that we can do most for the adults through their children. In no other field is it so true, that "a little child shall lead them."

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Sir, I have tried to lay before you to-day what appears to be a logical scheme for agricultural education. Begin with the child as in the case of all true education. Carry it through Public school to High school, then to special schools of agriculture, and lastly, if time and money permit, to the university. I wish to close by saying that we appeal for your hearty interest and support. Aid us in trying to make the next generation just a little better than ours.

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CHAIRMAN: Discussion is asked for on the matter dwelt on by Mr. Howe

VISITOR: I would like to ask the question as to the situation between the Public and the High school and the Agricultural school. What connection the High school has between the Public school and the Agricultural school.

MR. HOWES: My idea was the connection all the way through; it was this. We are giving the boys more and more and carrying it on simply by rolling up the importance of the work in the nature of the snowball. That is the same spirit that is encouraged throughout the whole school. The boy does not have to go through a High school at all.

VISITOR: What education does the boy get from the Public school that will fit him to carry on a farmer's life? In the High school what benefit does he get? I have had some experience by sending a boy to a High school. What benefit would come to a man who carries on the agricultural pursuits after going to the High school?

MR. HOWES: If the individual is able to profit by that amount of education—if he should take an interest in it?

VISITOR: What is there in the High school education that will benefit him in carrying on an agricultural pursuit? I am speaking between the two schools.

MR. HOWES: As far as my memory serves me there was a syllabus drawn up giving the course of study in the High school and the teachers seemed to think it comprehensive enough. It took up soils, air in soils, and the action of air and water on soils, care and production of plants and called for the discussion of animals and had a little to do with horticulture. In fact, it touched in an elementary way on all farming activity.

VISITOR: Does it touch on it enough?

MR. HOWES: If you desire that particular education your boy should go to the Agricultural school. You cannot expect that education if you are going to finish his education in the High school.

VISITOR: I have found that a boy sent to a High school, well, I think they have educated more fools in the High schools than elsewhere, and I would like to know what they educate them in and you said an elementary course in what you mentioned.

MR. HOWES: I said it was not possible in our High schools to give any more than an elementary instruction, and I take issue with you that your Public schools or High schools in the province of Alberta have been educating fools.

MR. SPEAKMAN: I think it would be sufficiently interesting if we could hear this afternoon whether the time has not come that we shall have more

demonstration farms than schools. They are doing splendid work, but are too few, and I am sure it would interest us very much if we could hear if we are going to have any more.

MR. JOHNSTON: Mr. Chairman,—I congratulate Mr. Howes and yourself on your work in agriculture in this province. I think it is a grand work that is being done in the Dominion of Canada to-day in that way. Some months ago I was called to Calgary to find out where the trouble lay in products sold to the consumer for one dollar from which the producer got thirty cents and the Canadian Pacific Railway twenty cents and who got the rest of it. I made some enquiries and made myself notorious by saying it was due to the educational conditions in the British Empire. People were being educated to make money not by producing, but out of the producer, and I say you are doing more in the province of Alberta to solve this difficulty than in any other part of the British Empire. I may say if you go into any of the Public schools, take the city of Nelson for instance, and ask in the higher class what the boys and girls are going to do when they leave school, you will find 95 per cent of those leaving school are going to do something or shove themselves in somewhere between the producer and the consumer. Not 5 per cent. of them will produce and I have always held that is where the whole root of the evil comes in, and must congratulate you and your colleagues on this work of education which I think is the grandest work being done in the province or elsewhere.

CHAIRMAN: If I may be pardoned for making any remarks just now I would express my idea with regard to any kind of education is that environment has a great deal to do with it, and if you are going to train a boy to be a lawyer, get him into the law courts where he will have a general idea of the practice. It is generally said that the men who read law at night and do something else in the day never make a success in the business. It would be a poor college that would undertake to turn out medical men merely by teaching them out of a book, and it is absolutely essential that there should be hospitals and different cases with different kinds of diseases and operations and other kind of things that medical men look after, and that they shall go there and experience the actual work of the thing, and if they do not have this experience and do not live in the environment of the hospitals and medical halls, the college would make a pretty poor business of turning out doctors.

There can be no doubt that agriculture is the most complex of all sciences to-day and a man needs more ability to do hard work on a farm than in any other business to-day.

As far as I am concerned I have had much interest in trying to educate boys in the province of Alberta, so that they would be able to make a living on the farm rather than spending a comfortable time the rest of their days telling other people how to do the things, and for that reason we have established our demonstration farms in connection with colleges of agriculture so that the boy will be in touch with the actual work, not on the large scale as in experimental places, but where things are that a boy can construct and not where we talk

young boys and women to college halls and give them habits that they will practise. We take them day in and day out and teach them the best thing they can do is to go on the land and produce more out of it than anybody else has been able to produce, and so we have built our schools of agriculture small institutions of a practical nature. The cost of erection of the buildings; purchasing of live stock; putting land under cultivation; erection of buildings such as live stock pavilion, blacksmith shop and carpenter shop and the equipment of the whole affair, only cost about \$110,000, and when that is compared with the millions of dollars lavished on agricultural colleges in other places, it is a pretty humble institution, but for a little over a million dollars we can build ten of these institutions in the province of Alberta. Our experience is that boys turned out in humble circumstances lay a firm foundation for the future.

In the old days one could not travel four miles to get an education at any educational institution, but now the boy is lucky if he rides four miles on a pony to get it. My boys are now riding four miles to get a Public school education. Even after that their chances of getting to High school are pretty slim or to any other kind of an institution.

Our experience with schools of agriculture to-day is that students come within a radius of fifty miles of the school, which shows how far an ordinary farmer boy who is struggling to make his living with his father and mother will go to get his education. We have built farm schools to see how best to serve the boys. We hope to be able to build at least two more in the coming year and I have the ambition to hope that in the next ten years there will be at least ten or fifteen schools of agriculture placed all over the province of Alberta for the purpose of teaching the farmers' sons and daughters the business of what this province can be made to yield.

We have spent millions of dollars in every province in Canada in order to afford boys and girls an opportunity for fitting themselves for professions and entering different lines of business. Is it not time we woke up and instead of giving boys and girls spending money make them not only good and intelligent farmers, but also make them happy and contented in their business of living on the farm?

A man farming near Didsbury a few months ago said to me that he wanted to see if his boy wanted to stay on the farm and sent him to school. He said, "The first winter he went I didn't have much idea he would learn anything. As a matter of fact he wanted to leave the farm and I told him if he would stay on the farm another year or two I would send him to the agricultural school. I figured I was giving him a holiday. I had not much notion of learning farming out of books and he didn't like farming. It was disagreeable to him and I had a job to get him to do his work and I thought if I gave him a holiday in the winter time he would come back in the spring feeling better. Well, no one could believe how he came back last spring. He used to be growling about harrowing the field two or three times before seeding and he would say that all the neighbours would be through seeding before us and that our neighbours would beat us and if we were going to get a crop in at all we had better get it in now. This spring he would not



sow a field until he had it in the proper condition. In fact, one field he would not let me sow in at all. He said he had to summer fallow the whole thing and I am satisfied he did the right thing, and instead of me bullying him around to do the right thing on his land he had the best crops in the neighbourhood and the best crops because he put the labour on it properly."

There is no trouble to put in the labour in any line of business if you have knowledge of what you are going to have when you finish. Hard work never drove any boy from the farm. If he has an interest in his work and had a pure bred cow that was sick, he would sleep in the next stall to it and see it through with satisfaction. It is not any trouble to him to have to go out and give it an extra bite and see that it is all right just before he goes to bed.

Hard work never drove a boy off the farm. They have been driven off because of drudgery. The first thing they hear in the morning at five o'clock is the old man's voice calling them to get up. Then they have to herd a lot of squealing pigs and feed them and they just know that they are pigs and they feed them because they have to feed them. Then they have to attend to some cows which are to them only some other kind of animal, and after feeding some other scrub cattle they come in to eat. Then there is a bunch of horses to feed and then they fall asleep again to dream it is five o'clock and the old man is calling them and the pigs are squealing once more. That is the thing that has driven the boy off the farm. Give him a training in the care of live stock and he will feed the pigs five times a day if necessary, because there is nothing that will respond to feeding as much as the right kind of pigs, and that is the kind of education we want to give to the boys on the farm. We do not want to teach them anything not done on the farm, and not show boys anything that cannot be done by hard effort, that is all.

So far as the great bulk of boys who are going to farm in this or any other country, the only kind of agricultural education to be given is to take the farm environment and have the boys inspired with the knowledge that there is not any business to be compared with farming or that will give men and women the same opportunity in life, the same endeavours, and the same chance for good health and the thorough enjoyment of what they are doing, provided they understand what they are doing and why they are doing it, and provided they know why they have no good or bad calves and know why they grow as fast or do not grow as fast as their neighbours'. These things have to be taught to the boys and girls. The same applies to the duties of girls in the house. What we need in this country to-day more than anything else is agricultural education of a practical nature that will send boys out to work on the land with the knowledge that it is a business worth while; that it is a business they will be proud to be engaged in.

What has driven boys off the farm both in this country and in the United States in the last number of years is because of the newspapers, and we are perhaps not as guilty here as across the line, because newspapers and people who should be using their efforts to get people on the land never refer in any way to the farmer but as "Rube," and they joke and picture him as coming into town chewing a piece of pea straw and he is made the butt of every joke

That is what is driven into them by every newspaper in the land and that a boy cannot go into society or be anything unless he gets into the city and earns \$25 a week and spends \$26 a week, and in that way becomes a great man and occupies some great position in the country. We have to get away from that sort of thing and preach the gospel of the land to the boy and the girl for the development of their energies and intellect as well. When we do that and dignify agriculture and give it the place it should occupy in the professions and businesses of the world, then there will be no difficulty about getting boys and girls to live on the farms or to develop the farms. Then this will be the most prosperous province on the face of the land.

By the way, someone wanted to know the relation between agricultural education and the High school and the High school and agriculture. Agricultural education is taught in this province in order that boys and girls shall learn everything they should know. Why grass is growing and the constituents of the earth, and nobody can enjoy the pleasure of the grass and these things without knowing something of why they are grown. Agricultural education is given in the Public schools in order to interest the boys and girls in this thing. To teach them the identification of weeds for instance, as the gentleman from Saskatchewan said this morning, so that when they see them they will call the attention of the hired man or their parents to them and have them destroyed.

I do not think there is anything more instructive than the fact that we have put a weed bulletin in the hands of every teacher in the Public schools of Alberta. Some boys and girls go to High schools and some to Agricultural schools. Those who go to the High school become teachers. In fact, all our teachers must go through the High school. Agricultural education is not put in the Public school for teachers. All the ramifications of agriculture cannot be taught in the High school. The idea is that we shall give them enough training in agriculture so that they will have sufficient knowledge to go out and teach the boys and girls such things as how the plants grow and as to soil, moisture and weeds, and the purpose of putting agricultural education in the High school is largely for the purpose of giving our teachers who are not raised on farms, as a rule, a general training in order to teach elementary agriculture at the schools and not to give them a training in agricultural education for the work of agriculture. The school of agriculture is the same as the legal or medical college that turns out the men for their professions, while the High school is the educational institution that gives the training that will start the boy right in the line of agricultural education. Two years in the school of agriculture and if they want to take a degree in Agriculture to be teacher or scholar, they have to take five years in the agricultural college to fit them to take their degree. I think with four years in the High school they can be taught enough to be able to teach elementary agriculture.

I want to say that Miss Goldie, who has charge of Household Science in the Olds school, will deliver an address on "Household Science for Farm Girls" at 8 o'clock to-night, and all you men who live in the town here tell your women folk to come and listen to this address.

The next speaker on the programme is Mr. A. D. Campbell, who I regret to say is not present.

We will now adjourn to assemble here at 8 o'clock this evening.

### EVENING SESSION—NOVEMBER 23rd, 1915

CHAIRMAN: Just before beginning our programme to-night Mr. Rankin, our Secretary, has some bulletins which he has received over the wire and which he will read to us.

War bulletins were read and received with interest.

Miss Marjorie M. Goldie, Instructor in Household Science, Agricultural School, Olds, will now address us on "The Advantages of Household Science to the Country Girl."

MISS GOLDIE: Along with the advances in the study of agriculture and the other sciences has come the increased study of housekeeping—more scientific housekeeping or home-making is the aim of the mothers for their young girls to-day. Economy, economy is the cry to-day, not only of funds but also of time and energy. With the higher cost of living and greater demand on the family purse, economical and scientific housekeeping is the cry.

Years ago everything was done in the home, foods were grown in the field and prepared in the kitchen; fabrics were woven and garments made. As years passed these industries gradually went out of the home and into the factory, until to-day little need be done in the home. In the country of a necessity, there are more home industries than in the city, and there the housekeeper must rely more on her own resources.

There are advantages and disadvantages to life on the farm, and one of the greatest disadvantages has been the inferiority of the education obtained by the average child in the rural school. This province of Alberta, being an agricultural province, has not lagged behind in the matter of bettering the opportunities for the education of the country boy and girl. Why in this province, as in other provinces, have institutions been built for the instruction of agriculture and household science primarily? Why have such large sums of money been spent and why is so much being spent in this work? Simply because the study of agriculture became a science, and because the study of housekeeping became a science also. To-day these sciences are being placed side by side with other sciences, and it is claimed by some that if this science of housekeeping were more carefully studied and its principles followed, there would be less need for the services of doctors, dentists and druggists, whose occupations to a certain extent, thrive on the ignorance of the people. When the study of scientific agriculture was first introduced and when firmly established, it was found that the study of household science was essential in ensuring the successful carrying out of the agricultural work.

In years gone by, the work in the home and on the farm was done in the best known way, one worker knew as much about it as his co-worker. To-day

each progressive one is striving to learn more and more, and there is a healthy competition between these co-workers. With the greater advantages of to-day comes the keener competition. The parents are not saying, "What was good enough for us is good enough for our children." They realize the opportunities of to-day and the progressive parents are ambitious for their sons and daughters. They want their sons and daughters to be better prepared for their responsibilities than they were.

For years it seemed that the man had the preference as far as scientific training was concerned, but since then the importance of the woman has been more fully realized. The woman on the farm has been discovered as it were, or perhaps it is that she discovered herself, and efforts are now being made to better the conditions for her there, to make them more attractive and more comfortable. It is for the man to provide or produce the means for livelihood for the family; but even though the man "provide the house," it is for the woman to "make the home." It is her duty and privilege to provide health, comfort and happiness, not only in the house but also in the community. A mother is really a Jack-of-all-trades. If anything is wanted, the mother is the one expected to supply the want. If the child is sick, it goes to its mother. If crops fail, the man looks to his wife. In carrying out the manifold duties thrust upon her, the more the mother knows, the more successful will she be, and the question is: How can a course in Household Science be an advantage to the coming women on the farms—the country girls? The subject is confined to-night to the question of the country girl, not because her city cousins would not also find such studies an advantage, but because the country girls are in the majority in these prairie provinces, and because their city cousins have many advantages from which the country girls are debarred, such as musical and literary treats.

#### THE VALUE OF SCIENTIFIC TRAINING

Monotony and drudgery are two qualities of housework or life on the farm to which many country girls make objection. They are ambitious, many of them, to leave the farm for city life for variety. Unless they are interested in their work they are not going to make a success of it. The scientific study of various methods creates or develops an interest. Work can afterwards be done with a great deal more intelligence, more interest, and with more success.

After living on the farm for years, conditions at first being anything but ideal as funds are low, but then improving as times become better, one is apt to lose interest, one is apt to jog along in the same old way. "Time and tide wait for no man," and as time passes standards change. To keep up with the times is difficult, but having only one life to live, and not nine as has the proverbial cat, why should not the housekeepers progress along with other scientists, and take the best possible out of life as the opportunities arise? If the future housekeepers have a scientific training, they will be raising their status and will be keeping pace one with the other. Too long the housekeepers' position has been looked down upon, and the girls who take this training and



go back to their own homes will be more looked up to, and should be able to alter conditions in their own home and community.

Without any course along these lines it is possible for a young girl to keep house, and it has been proven that it can be done successfully. The aim of a number of housekeepers on the prairie to-day is simply to provide three square meals a day, even as there seem to be some who live to eat. Food, of course, is necessary, but to bind one's self down seven days in the week to peeling potatoes, washing dishes, etc., is a poor existence. Surely there is something higher to live for. The higher culture is very important—to live unto oneself is not the order of the day, though apparently essential in some of the off farm homes. To be able to entertain your friends is an art, though sometimes in the busy farm life some of the niceties are apt to be omitted. Even though such knowledge is not of everyday use, it is a very nice thing to know how to entertain and what is the right thing to do. This is one of the strongest advantages to a course in household science.

The average girl who attends our school is between the ages of fifteen and twenty-five, the years when the character of the girl is being developed, when habits are being formed for the right or for the wrong. I may say that I have had students from fifteen to fifty years, but the average is from fifteen to twenty-five. A girl at this age is very sensitive, and self-conscious, but daily contact with other girls many sharp corners are rubbed off, perhaps more easily and more effectively than if at home. She observes what other girls are like and unconsciously she has before her ideals which she is constantly imitating or following. On the farm her girl chums are few and far apart. She seldom has any choice, but at such schools at such an age, I think it is a great advantage for girls to mix with one another, getting each other's ideas and benefiting from one another.

After asking some of our students just why they came to the school to study household science, I discovered some interesting facts. Some came for one thing and some for another. Some intend practising in their own homes in the near future, some intend teaching it in the Public schools, and there are others who came especially for sewing and dressmaking to enable them to go out into the world and make a living for themselves. Some came for the course in cooking specially, and what an advantage a scientific knowledge of this subject would be to them. On the good knowledge of the mother on this subject depends the health of the family, also the good nature. Long before the study of feeding babies was scientifically investigated, balanced rations for the farm animals had been drawn up. Ill-health more often is due to improper food than to anything else, and a scientific knowledge of proper food for health and for disease for the infant and for the aged, would be of great value to the rural housekeeper. One mother I heard of just the other day had been feeding a fifteen months old baby strong coffee and wondered why it was sick. There are many good cooks in the country, but there are very few who know the proportions of ingredients for the various food preparations, who know the various steps in bread making are essential, and who can account

failures in cooking. That is what these young girls are taught, the underlying principles of bread, cake and pastry making.

Why did some of the girls prefer the sewing? What advantage was it to them? Sewing is an art which seems to be going out of the home as the garments from catalogue houses are coming in. But enabled to make a complete set of garments for herself, the girl increases her knowledge of textiles, develops her originality and in the study of embroidery and in house furnishings, learns how to beautify her surroundings and make them more attractive and homelike. In this country to-day the people are not recognizing nor demanding textiles of proper quality. A low price too often is the attraction, but prices do not always correspond with the values, high prices not always meaning the highest quality. Pure textiles are as important as pure foods, and a knowledge of good qualities ensures more economical expenditures. The young girl to-day is rare who can buy the material and make for herself a complete set of garments, having them tasty, well fitting, reasonable in price and good in quality. But with the training given in this subject the girls are better fitted to choose suitable materials and make their required garments.

Even though they learn to clothe themselves more economically, they must be taught to preserve their garments and laundering is taught them. Anybody can wash, you say. Yes, but there are proper and improper methods, as in other housework. In the scientific study the four fabrics, cotton, linen, wool and silk are dealt with, methods being considered of laundering the white to preserve the natural whiteness and the coloured ones to preserve the dyes, different agents being necessary for the various fabrics and various colours. She is also taught to remove the various stains without destroying fabric and colour.

Woman's realm is in the home, and it is for her to make the home as comfortable, as attractive and desirable as possible. There are many careless homes on the prairie, and our aim is to make the girl ambitious to go back home and better conditions there. More comfort does not necessarily mean more expense. Often some new ideas with a little thought and energy will bring about a transformation. There are too many husbands and not enough homes in the rural community, and we aim to better conditions by giving our girls some appropriate suggestions. Many of these homes, too, are lacking in good sanitary conditions. The ideal is impossible to the average, but in the study of sanitation the girls are given an idea of what should and should not be and we trust some good may result. Owing to unsanitary conditions, improper food, etc., there is much sickness in the rural home as elsewhere, and home nursing is a subject of which every mother should be more or less familiar, it is usually less. All ailments are brought to her, and too often her knowledge cannot cope with the situation. The girls are given a very complete course in this subject, and it should be of great assistance to the housekeeper on the prairie, where the doctor is too far distant for emergencies.

Education should be of a physical nature as well as an educational nature, for unless a woman is fit physically, her troubles will be many. Physical training is essential, and though the average country girl has plenty of exercise

in her daily work, too often the right muscles are not exercised, and she becomes stooped or round shouldered. This applies no more to the country girl than to the town or city girl, but physical drill is often neglected in the schools or is not kept up long enough.

The aim of such a course is to develop the young girls, making them to take their places as practical and scientific home makers. The ideal home maker should not have her interest only in the daily routine of her work—should not be weighed down by her household responsibilities. She should be able to take her place in the community, in the social circle and in literary clubs. For the young boys and girls at the school, literary meetings are held, English lectures being also given, and they are encouraged to do more and better reading during the long winter evenings. Social evenings are also held and these, too, hold an important place in the education of the young girls. She observes the customs of others and profits by her experiences.

Now, there are some who may say the mother is the one to teach the young girl, and some may say "why not let the girl learn how to do this from her mother?" I think the men used to say that about the boys, and some say "the home is where she should be taught." But if the mother does not the information herself how can she impart it to her daughter? The young girls may not make use of all the information every day, but it is nice to know how to do things when the occasion arrives. Some may say, "what the mother knows is good enough for the daughter," but is that progressive?

One writer says, "Knowledge gives power," and whenever one's knowledge on a subject has passed the stage of drudgery and becomes a science, its performance immediately becomes a pleasure. The ability to do a thing in the highest known perfection, or a little better than someone else, is always a source of delight, and it little matters what that something is. Another writer says, "There will be no trouble with the kitchen end of the house when the women take the same pains to know their business as men do." Nothing needs development so much in country life as wise utilization of time, and the orderly systematic arrangement of work.

Naturally every specialist thinks his or her subject is the most important, but for the country girl a course in household science would give her fresh interest, fresh enthusiasm in her work and knowledge to assist her in every branch of her life work. It would make her fit educationally, socially and physically to carry out the many problems that will be placed in her hands the days to come. She will be a leader in her community, and I trust that the years go by those whom we are sending out from our school may be instrumental in bettering conditions, making life on the farm more attractive. (Applause)

CHAIRMAN: We must have conditions in the home satisfactory, and the success of the great majority of the prairie homes is dependent largely upon the heroism of the women who have stayed upon the farm and remained there when the man might perhaps have left and have there made the kind of life that has something of a reasonable occupation for him. It is very gratifying to know this year that we have over twice as many farmers' daughters attending

ing our schools of agriculture as we had last year. The farmers are all awakening up to the fact that if their girls are going to remain on the farm and become farmers' wives, it is highly important that they should have the training that will make life much easier or plainer, if I might say so.

I will now call upon Mr. S. S. Dunham, Vice-President of the United Farmers of Alberta, Lethbridge, who is to discuss "The future of irrigation in southern Alberta.

MR. DUNHAM: Mr. Chairman, Ladies and Gentlemen,—After hearing the last address from such a pleasing speaker on such an interesting subject, I trust that you will realize the handicap under which I am put before you and bear with me.

Some time ago I was asked by the Secretary to address this body, and at that time he wrote me and asked me something as to what subject I would be willing to discuss, and among them I happened to mention this subject, but it did not occur to me then just what subject I would speak on. So after thinking upon it for some time, I came to the conclusion that in order to discuss it intelligently, most of my remarks would have to be addressed not to the future, but to the present. Some speaker has said that we have no way of judging of the future but by the past. We have no way of judging the future but by present and past experience and comparing those with what we hope to accomplish in the future.

Now, last fall, I think it was, a number of farmers in our part of the province at different places, invited me to talk to them upon the question of comparative dry farming and irrigation farming. Someone had told them that I had tried both methods and I had farmed enough on both lines to go broke, and consequently they thought there would be a sort of fellow feeling between me and them and I would know something at least of how it happened.

Now, I began having some experience in farming in the southern part of the province in 1906. I took off my first crop in 1906. In presenting that question it occurred to me that a statement of what I considered the most practical way to handle the land at the present time to get the best results would be of interest, so it occurred to me that I could first reach the proposition from an irrigated standpoint by dealing with conditions from a dry farming standpoint. My idea was to show what it would cost to produce returns from farming in our locality on a wet basis on the dry land. I had some land that belonged to other parties upon which I had been hiring the work done and had had considerable experience along that line, also some irrigated land upon which I had hired the labour to produce the crop. I do not say that these figures here—but the intention of these figures really was to be a little favourable to the dry farm—the actual cost of the work I had done in most cases was a little greater than these figures on dry farming, but against that I have given an irrigation farm on the exact figures I used, but these figures are a little conservative.

My idea is to show the comparison if possible favourable to the dry farms. Further than that, I want to show the profit from the dry farm and the profit



from the irrigated farm, allowing a labourer a reasonable compensation for his work, and it was with that in view that I took these figures. This was the most profitable method I had in my experience in getting the best results on dry land in our district. I may say that I don't know anything about dry or irrigated land farming in Alberta except in the Lethbridge district and the only thing I would know would be from general knowledge of what I have read. In the Lethbridge district, I believe, this method would be proper. These figures have been criticised by some able farmers down there. While they differ in some minute details, in the main every successful farmer I have conversed with on the subject says they are conservative.

The first money and most costly was discing after the binder, which being a hard time to get labour cost me 75 cents; that is a double disc run immediately after the binder. The following spring after seeding was done that was summer fallowed at \$2.00 per acre. The work necessary to keep weeds down and packing was \$1.00 per acre, and all the work was done a year before I got a crop; consequently I had to pay interest on the money invested, which was \$3.75 at 8 per cent., which had to be added to that the next spring. The spring work



Irrigation on the Duke of Sutherland's Farm Colony, Brooks, Alta.

varied owing to the way conditions are. I paid on an average 50 cents. Seeding cost me 40 cents per acre. Seed cost me \$1.00 per acre; running a harrow and sometimes having to pull some weeds an average cost of 30 cents, and the cutting and stocking on an average can be done for \$1.25 per acre. The threshing on the basis of 30 bushels cost me \$3.00 per acre and the hauling an average of six miles from the station, which I take it is an average distance for grain farmers, cost 80 cents per acre. The total cost is \$12.35 that I paid out for the crop.

Now that was for work for two years. In order to find out how much per acre I was putting on to the land, I divide by two, which gives me my annual cost of farming \$6.17 per acre. These figures were compiled last fall. One year with another with that kind of farming you should count, if you get a crop at all, on an average of 30 bushels to the acre. Bear in mind I say, if you get a crop at all. There is one thing a grain farmer must figure on and that is his contingencies. Grain farming is the most uncertain farming there is. The cereal crop is the most uncertain crop on a large scale. There are more gamblers in grain than in any other crop produced. The reason for it is because of the contingencies. Some places one thing and some places another. I have never seen a country where the grain crop or wheat crop was an absolute certainty. I lived in a country where total failure of crops never occurred, but a grain crop frequently failed. The contingencies we have to contend with here in this country are six in number, the serious ones, the serious things that keep us from a crop. Wind in our southern part of the province we have to contend with. Weeds we have heard a great deal about to-day. Winds, weeds and worms—The three W's—it is quite a gauntlet. Drought, hail and frost. Winds, weeds, worms, drought, hail and frost is the gauntlet the grain farmers have to run in southern Alberta. There are some others along the side that are quite interesting occasionally, but as a whole if you get by on those six, you are likely to have a harvest.

Now, I say this is not knocking. I believe that southern Alberta is the greatest grain country in the world, but I believe that excepting some things. Occasionally it is true that we are hit a little harder with the drought down there than you are, but when the time comes for the frost, he gives you a crack that he does not give us, so there is no one that can call the kettle black, and when it comes to this cereal proposition you will find those contingencies coming. Where I was raised we did not have these contingencies, but we had others; we had the rust and we had the Hessian fly and the winter killing and the chinch bugs, so you see no matter where you go these are the conditions of the business and anybody that engages in the grain business must simply count on these contingencies. So prominent are these contingencies in the production of cereals that we must count upon sowing four crops and harvesting three as a rule. I mean four full crops. Sometimes the contingencies do not take the whole crop, but as a matter of risk you can figure on diminishing your yield by reason of contingencies 25 per cent., but I think that is conservative. Some of us fellows by being in the south and not being able to follow the most profitable methods, have been hit heavier than that and lost more than 25 per cent., so I

reduced that 30 bushels to the acre by 25 per cent., which makes 22 5-10 bushels to the acre, and you will notice that comes awfully near to the Alberta average. But bear in mind that in compiling the crop of Alberta you do not get the hauled out crops. You get the report of the threshers. You do not get those things. So that when you see that averages 22 5-10 you get pretty close to the actual conditions. The money value of that 22 5-10 bushels at an average price of 70 cents—I take the average of the years that I have been familiar with the business here—it averages about 70 cents, is \$15.75, that is, for two years' return. One year \$7.87, and that is your annual return per acre farming in that year, summer fallowing every other year. Bear in mind in that cost is ample pay for your labour. I am getting it.

Now, your profits; you have got your labour and machinery, \$6.17, but deduct that from \$7.87 and you have a profit on your farm of \$1.70 an acre working that way. Land is worth what it will earn; that is a business principle. If it will earn a large amount it is worth a large amount; its value goes up. It also depends upon what money is worth. If money is worth 8 per cent. land is not so high as if money were worth 5 per cent., because one of the great factors that goes into production is the money; money at 8 per cent. earning \$1.70 based on a capital investment of \$21.25 for your land.

Now, I may say that this estimate during 1915 has been literally knocked all to pieces. The year 1915 has passed all calculations. I know of one man that farmed directly on that plan and he measured his grain and his land, and he actually marketed this year 74 bushels of grain to the acre. The fellow down there in our country that did not get 40 or 50 bushels to the acre has something wrong with him, so that this is evidently entirely out of date, and I believe you know better how things affect you when fellows talk about the same thing all around you. You know how it affects you if the other fellow thinks it is good, why we all think it that way, but I actually believe that estimate is conservative. I think I would like to revise it and make that kind of farming produce 35 bushels to the acre. I am inclined to think it will do that on an average, and in the event of 35 bushels to the acre, the price of your land instead of being \$22.00 would be \$32.60.

The next plan was to see what I could do, not by a condensed high degree of irrigation farming, but by that kind of farming that a man would devote himself to without a great deal of labour and without going into that class of farming in such a detailed and skilful way such as you could use on small areas, so I took a piece of land already seeded to alfalfa. We have got a start from a different basis, as alfalfa is more or less a permanent crop. These figures are what I hired the work to be done for. My irrigating cost me 25 cents an acre for applying the water. I think in our districts that can be done. I know of one farmer who is a good irrigator and he was sure he could do it for half of that and run the water over it. I actually hired the work for three different years, and in some instances I know the man who did the work made some money on me by sub-letting it to another fellow. The cutting and stacking—I am not so sure that this figure is actually correct—\$3.75. I am

not so sure that alfalfa can be properly stacked at this figure, but it can be the way this was stacked, and it was very well stacked.

I was figuring on a yield of 2½ tons. I may say that I made that conservative. I am quite sure that my alfalfa meadows are making more than that. In fact, the only tests I have made have gone considerably over that, and Mr. Fairfield, on the Experimental Farm, has a larger yield still. At \$1.50 per ton it cost me \$3.75 to put in the stack, which made a total output of \$5.45, that is not counting anything for putting the land in alfalfa. As I said before, it is only done once in rotation and once in a great many years if you are not. The question came up what that alfalfa should bring. I wanted to make the valuation low, so that it would not be disappointing to the people who were considering the proposition. I knew that a ton of alfalfa was worth something like 2½ tons of timothy for feeding purposes. I knew that I had never sold from my farms a ton of alfalfa for less than \$6.00 per ton in the stack, and the price down there has run from \$6.00 to \$20.00, \$6.00 in the stack.

I came to the conclusion that it would be fair. A ton of wild hay I was told could not be put up to make any profit on it for less than \$3.00. I knew it would cost that much to put up timothy at least, and as these hays were the competing hays against alfalfa it would not be unfair to say that the lowest price on which they could be put up would be—judging from the feeding value—a fair basis on the feeding value—that would be something over \$6.00 and I decided to be safe on it. We should be able to get \$5.50 in the stack for alfalfa.

I count the value of my hay at \$5.50 which brings the annual income to \$13.75, taking off \$5.45 I had \$8.30. Land I said was worth what it would earn. Taking it on the same valuation as the dry land, I had an earning capacity of \$103.75 on the irrigated land with that conservative value. Now, if the same scale that is prescribed for the dry land were prescribed for the irrigated land, I am satisfied that the yield and quality could both be increased and the value would be increased, so that the yield should be instead of 2½ tons 3½ tons. In that event, my irrigated land on the same basis would pay theoretically, \$153.75, so where you count your dry land at 35 bushels it would seem theoretically in our district that water would increase the earning capacity of the land by about 500 per cent. That is, one acre of irrigated land is equal in earning capacity to five acres of dry land. That is theoretical. There are other things which will enter into it. The value of land will depend upon the application of labour and whether labour is scarce. The proportion of labour and the higher skill required on irrigated land might work somewhat against the irrigated land in results, but in our districts, the conclusions I arrived at were that one acre of irrigated land was earning as much as four or five acres of dry land, so we see the value in that regard of the application of water in that district.

Coming down to my subject, the future of irrigable land. Just looking at it from what you would say is a sort of student view, it would appear that the outlook for irrigation was rosy. There are other advantages besides the increase in value. The great advantage is certainty of crop. I have heard



mentioned to-day the advantages of home building. The fact that you may have trees, some fruit, gardens, lawns, all appeal to the home-maker. Some of our people in the Lethbridge district have turned their attention in that direction and the results have been marvelous. On that bald prairie where the tree is of so much value, to find a home with the proper shade and ornamental trees and wind breaks and with some flowers, some fruit, and a lawn, is indeed a wonderful advantage over the home that is built without the application of water. I am sorry to report to you that the farmers who have taken advantage of this feature of irrigation are not very many but some have, and we have as a result a number of beautiful farm homes.

The thing that I want to call your attention to more particularly is that these figures and this apparent advantage of irrigation are more or less theoretical. The grain farmer has the advantage when it comes to marketing the crop that he produces. The grain farmer when he is through that long wait and has run the gauntlet and has threshed his grain and hauled it to town, knows what he has got. As compared with that, however, the irrigated farmer is figuring on \$5.50 an acre for his alfalfa in the stack, and his work to a certain extent is just begun. That brings me up to about what I want to say—The future of our irrigated land. It is all well and good to talk about the wonderful crops and see visions of the wonderful future of the irrigation block, and to see what is possible of accomplishment. I like to look ahead a few years and see these blocks the beauty spots of our province, which they should be. I would like to see them dotted with these homes about which I have been talking, populated by comparatively dense population; boys raised on the farm who have been educated in the Honourable Minister of Agriculture's agricultural schools. All of that looks well enough. Why that irrigated belt is capable of maintaining a population of several million people. But in talking about that future, or trying to predict what that future will be, dealing in generalities, attractive as they may be to us, is not the practical point that we have got to settle at the present time. The question of marketing the irrigated products is very complex in comparison as I said with the dry land products. We in Coaldale and the Lethbridge districts have gotten far enough to know what we can produce to a certain extent. The valuable work of W. H. Fairfield on the Experimental Farm by which we have to travel every time we drive into the city has taught us, together with our own experience, that we can produce the results; that we can get the yields; that we can grow alfalfa; that by rotating our crops we can get large yields of grain. Why in 1914 in the Coaldale district, there were crops of wheat that harvested 35 bushels to the acre and Mr. Fairfield with his rotation crop in 1914, produced 64 bushels to the acre, a yield equal to an extraordinary yield on a dry farm, and that was produced in 1914 on an irrigated farm when dry farming was a failure.

We have confidence in what we can produce so far as yields are concerned, but what are we going to do with it? How are we going to turn it into money? Did you ever notice that a farmer is just like everybody else and the old rule that he moves along the line of least resistance applies to the

farmer with as much force as to anybody I know. Why does a farmer like to continue grain farming? He can see through to the end. He knows the road that he has travelled and he can see it clear through, and see the results and what is coming from it. Why does he not take up some of these other lines of mixed farming that we talk about? The road is much more complicated. In some instances he has not travelled the road before and the result is that he is sceptical and does not know whether it is best for him to do that or not.

To-day in the Lethbridge district there are several thousand tons of alfalfa; quite a large percentage of it is not marketable because of it being off colour. Two or three years ago the question came up of marketing our alfalfa. Well, what was going to be done about it? We got together and we formed a co-operative farmers' organization for the purpose of marketing our alfalfa, and after organizing and incorporating it, I happened to be the President of that organization and have been since its inception. We went to work to dispose of this product and we have had remarkable success. We have shipped alfalfa hay from Penticton on the west to Winnipeg on the east, and up to this year there has never been a ton of alfalfa left in the field other than what we wanted to use. This year not a ton has gone out. You men who know business will say it is not good business, that we should not do that, but as I said, the farmer travels along the line of least resistance. If he can market his crop that way he is going to do it with the least trouble. This year we have several thousand tons of alfalfa that is not cut. Right now we are up against the proposition—one of the difficulties in irrigation farming, and permit me to say right here, and I have heard a good deal of talk to-day about production, our education is along the lines of production, and that is all right and proper and I say "Amen" to it, but when you have educated your boy to produce well on the farm, you have only solved half the problem.

The disposition and the marketing of what he raises is just as important as the production. Some gentleman from British Columbia stood up and put a question that he had asked somewhere about marketing a certain product, only 30 cents of which went to the producer and 20 cents to the railway and where did the other 50 cents go to, and I noticed nobody answered that question and nobody yet has answered it. If I were to add a criticism to the excellent discussions that have taken place here, and the emphasis that has been brought to bear upon the farmer's education, if I were to criticise that discussion, I would say it was slighted on the part of the importance of marketing the production.

I assume that there are a number of irrigation farmers here that are in the farming business. That proposition is to-day receiving the very best attention of the United Farmers of this province, but if the United Farmers in this province can serve the grain farmer, if they can serve the grain farmer to advantage—Oh, you irrigating farmer—Oh, you mixed farmer!—you need organization more than anybody. You have got more problems to solve than the grain farmer. His market is comparatively easy.

Suppose we mention the question of dairying. I was talking the other day to an expert dairy-man and we were discussing the question of dairying and he said our dairy industry was in a miserable condition. Why, he said, our competition is away off yonder in New Zealand, thousands of miles across the sea, and yet they have the system down so fine there that they can ship a product those thousands of miles and bring it into our various cities and compete with us and take our market away from us. The work of marketing is a very, very important work. Let us get back to the question of our hay. I don't want to get too far away from our subject. I see Mr. Speakman looking at his watch. I am afraid I have talked fifteen minutes already. He always times me when he and I are together, but I want him to note one thing however, that when the gentleman arranged the programme instead of coupling Mr. Speakman's name with the lady on the programme it was my name. (Laughter.)

On this question of marketing this alfalfa I want to tell you men, and you irrigating farmers, and all of you who are interested in it, that the future success of our business, the future value of our land, the future success of the irrigated projects throughout the province depends upon one thing, and one thing alone. Why, if these gentlemen who were discussing this unfortunate affair at Gleichen had come to me and asked me to settle it, I could have told them how to settle it. I can prescribe to-night the remedy that will make them forget all about the alkali and seepage and frost. You say, what is it? You demonstrate that it pays financially, pays to farm with irrigation and that it is a paying proposition to farm with irrigation and they will forget all about these difficulties with which they apparently have to contend, or else go to work and try to solve it, if you want to make a success of irrigation in this country.

Let me go a little further than that. I want to quote from the Hon. Mr. Duncan Marshall. "A fellow said Dunham said some good things, and the other man said, 'Yes, but, Dunham says so many things it is wonderful if he does not say something good.'" (Laughter). Mr. Duncan Marshall says a lot of good things, and one of the good things is this; if you want to get people to go on to the land make the conditions on the land so favourable that they will prosper there and that is the way they will go on to the land.

That is the greatest proposition that is before these people as a whole. The greatest asset of the country is agriculture, and if you are going to develop it you cannot develop it by laying the burden of other institutions on it. You must relieve it of its burden and allow it to prosper. Then people will come to your farms. That is the first essential. If irrigation is going to prosper in the future there has got to be some place in Alberta now where it is demonstrated beyond the question of a doubt that irrigation is a paying proposition. You cannot compare it with the States. The fellow will come to look at it and say, "Why are you not prosperous?" If irrigation is a success we must demonstrate that principle. We must be prosperous. We are up against this proposition at Lethbridge. Sooner or later we will solve it. Some day our

thick heads will solve it. We will get to know the feeding properties in alfalfa and we will get to know that there is stock up here that can be taken through this irrigation belt and fed and finished and then shipped on, and there will be plenty of money. I look forward to the time when the Calgary and Edmonton stock markets will be full of grass fed stock, because all that country has got to raise stock for a long time, especially away from the railway, and we can carry that stock into these irrigated belts and by the cheap alfalfa hay we have there, we can finish them and return to the province the increased value for the work or feed that we put into them.

We can serve a mission, serve an end which at the present time we do not know how to do, we actually do not know how, and these farmers do not know. They have not had the experience in the first place. They are not sure enough of the proposition to say to the bank I want to borrow some money. I want to feed some cattle. They have not had the experience. If these men advance as fast as they ought to, they need some attention right now. Offer them sheep, distribute amongst these farmers four thousand lambs. Distribute amongst these farmers in bunches of two or three hundred, as the case may be, and have them fed under the direction of an expert. This would cost nobody anything except the value of the services of the expert. It would teach the farmer the road to the market, and next year he will probably want two hundred or possibly five hundred sheep. Cattle have been selling on the market here at from \$5.25 to \$5.75 for feeders. If those cattle can be put on to these farms and fed under the direction of an expert who knows his business, why the business of making the irrigation farm prosperous will be greatly augmented. It would help wonderfully. We need that help. We will get it after a while by actually blundering on to it. At the present time we need that experience so as to see through to the market.

I have referred to the dairying proposition. A few years ago we in trying to follow Mr. Fairfield in his rotation of crops planted considerable potatoes. It happened that year that the potato crop, after they were in the root houses, could not be sold practically for any price. I know of one man that put up twelve thousand bushels of potatoes in his root house, and those potatoes were never taken out of there, they rotted inside. The question of market is the important question upon which the irrigation farmer to-day needs help.

We are a long way from the centres of population. The freight question is an important question in our marketing, and when we have over-produced for our local market it re-acts against us very quickly, and the result is we become discouraged, and justly so, so that in thinking of the bright future we have for irrigation, and I don't want to be a pessimist—I am an optimist on the subject—we must not overlook the marketing proposition. In farming, in my experience, in both lines, and I was raised on a farm, and I now say I do not care to farm under any other conditions than irrigation. I believe it the most scientific and satisfactory way to farm where it is available, but I want to emphasize this, that to every person interested in the proposi-



tion, the problem of marketing the products is the problem he has to solve.

Let us learn a lesson from our wheat business. Why does Canadian wheat enter the foreign market and compete successfully with the products of the world? The answer is three-fold in its nature: First,—because the quality of our wheat is equal to the best. Second,—the quantity produced for a given amount of land, capital and labour is sufficiently large to make the production of wheat reasonably profitable. Third,—the business of marketing the wheat is sufficiently systematized as to prevent an undue amount of economic waste. I do not mean to say that in all three of these respects there is no still room for improvement. It is possible for us to increase the quality of our wheat. Each year we are increasing the quantity by improved farming etc. Our excellent system of marketing we expect to improve by increasing the storage facilities, at or near the point of production and enabling the transportation companies to have longer time to move it and thus lessen the rate of transportation, but on the whole the system is a success as it is.

Now, what we have done for our wheat we must do for the products of the mixed farmer. If our dairy interest is to succeed as it should our butter and our cheese must be of such superior quality that they will compare favourably with the products of any other country. This we should be able to do without great difficulty but it takes education, it takes system, and it takes time. Surely the quantity of these products must be large enough for a given amount of capital, land and labour to make it profitable to produce them. This we should be able to do with our irrigated land and our alfalfa, but it takes time to breed up dairy herds that will pay, and then we must have our marketing machinery so arranged and so systematized that it will avoid economic waste. Given these things Alberta irrigated land should be profitable for dairying purposes. The same might be said in regard to production of many products.

One thing more I must say, at the risk of being criticised for repetition and that is that not only irrigated lands but Western Canada—aye, all Canada—depends upon the development of agriculture for its prosperity. If this is true we cannot afford to burden this great source of national prosperity with unnecessarily supporting any other industry. We must compete with the world with our products, hence our machinery, our transportation, the money that we use, and the supplies that we buy must all be furnished to us at a price as low as is consistent with good business.

Given these conditions the future of irrigation in Western Canada is assured. Given these conditions, these different irrigation blocks, consisting more than a million and a half acres, will in a few years be peopled by a prosperous and happy people and will become the beauty spots of the prairie.

Ladies and gentlemen I have detained you too long. There is much more to be said and more to be done along the lines indicated by my subject but I trust enough has been said to cause some thought, and at some future time I will be pleased to continue the discussion further.

I thank you.

CHAIRMAN: The Resolution Committee will meet here to-morrow morning at 9.15 A.M.

This brings us to a conclusion of our programme for to-night. I think Mr. Dunham's discussion one of the serious features of the farmers' business, and while nothing was said about discussion of his address on the programme, it is not very late and I would be glad to hear from any person here with respect to this question, because there can be no doubt about the fact that if this province is to develop and become the exporting province of farm produce that we hope it will, the question of finding a market for the thing the farmer grows, or helping him to find it, is just about the most serious problem we have under advisement at the present time. If any person has anything to say I will be glad to hear them.

MR. LAWRENCE: As having some experience in irrigated lands and growing fodder, grasses, and such like, I would just like to say that the most serious aspect of Mr. Dunham's speech to my mind was, that only producing say two tons of alfalfa to the acre, was sending that produce to Penticton and Winnipeg. If he is only producing on that land that quantity of the finest fodder plant that is known to-day and under irrigation, it seems to me that his land must be starved for the want of humus (the manure) to make that plant grow and produce part of your crops. That to sell what he is producing, to send it away that distance—of course distances do not matter much—but to find distant markets like that when every ton of that produced ought to be fed at home in order to feed the land and to make it produce anyway from four to six tons to the acre under irrigation, it seems to me to be the most serious part of his farming operations. I might say a great deal more perhaps but alfalfa growing is to come up to-morrow, and it may be that with the other side of this thing, a different aspect may be put upon it to that presented by Mr. Dunham. The serious part is, producing that small quantity of alfalfa under irrigation and then selling it off the land.

MR. FREYBERGER: I came from a section of the country that grew a great deal of alfalfa. In fact I think it was the banner alfalfa state. I moved there in the spring of 1904, and stood in my back door there one day and counted two hundred hay stacks that were absolutely worthless because of the reason Mr. Dunham has stated. There was no market for it. Some parties shipped it to Kansas City and got the bill back for the freight. It would not pay the freight although good in feed value. When I came from there in 1912, there were five or six alfalfa meal mills established in the county. The one in our town was grinding on an average during the busy season, one hundred tons of hay every twenty-four hours. For that hay that was not worth anything, the farmers were getting from \$7.00 to \$10.00 a ton. A market was opened up for it in various places. I suppose every one here is familiar with alfalfa meal and perhaps has seen it. In addition to that, there were thousands and thousands of sheep fed in the county of late years and the result was that in place of seeing any alfalfa hay left over they went around and

bought up the alfalfa that was left after threshing, and everything had a value and to-day it is one of the great industries of the country.

That can be done here. There is no reason why it can not. They have mills that they move out to the stack and grind just as you do a grain stack and it is of better value than bran. I believe it is higher a little in price of value than bran, and I believe that with a little co-operation and a little effort that can be obtained here. I believe, however, the best results can be obtained by feeding it to stock. I believe that is the solution, but I notice here in Alberta, the marketing of lambs for instance, there is very little difference in the price of mature or fat lambs and sheep. I apprehend the market for good juicy lamb meat has not been made. That will come I believe, in the future. I would like to see the day when it is possible for a man to go to the bank or meeting house and get what money he needs to buy up stock to feed and put on his farm. I believe that day will come and I will be glad to see the time when we have a market right at Calgary or Edmonton, or some place close to sell this fat stock, and to see these irrigated farms the finishing places for stock grown on the ranges, and I believe these things will come with little thought and patience.

MR. JOHNSTONE (Nelson): This is very interesting to me. I have been in the fruit growing business for a number of years. I have found the solution of it and it is very satisfactory. I have been bringing the producer and consumer together. A few months ago I visited Calgary and visited the offices of the United Farmers of Alberta, and I told them what I had and since then we have been mutually co-operative, and I noticed some I met the other day looked a lot younger after I had shipped some of my cherries in. I know I ship a great deal of them in.

I come here among you as a delegate from British Columbia, as a delegate for the Associated Boards of Trade of Eastern British Columbia. Now they are at present your nearest and best market, and I know my friend from Kamloops will object to my bringing it in now, but I want to say that I come with the most hearty invitation for this Congress to meet next year in Nelson where you will bring the producer and consumer in closer touch than they have ever been before, and I can guarantee that you will enjoy the finest time you have ever had and you will all like your visit and my cherries.

MR. FAIRFIELD: I want to say a word to correct any misapprehension of Mr. Dunham's remark, which I think Mr. Lawrence has drawn. As I understand Mr. Dunham, he mentioned a minimum yield of five and a half tons of alfalfa hay to the acre as a basis to compute his values on as compared with dry land results. I might say as an actual fact, in seven years, raising of alfalfa under irrigation at Lethbridge, we have weighed the hay from every piece we have cut, and the average for the last seven years has been over five tons of cured hay to the acre. Mr. Dunham spoke of feeding from the stack. We know that in fully cured hay there is some shrinkage between that and what you can pull out of the stack, but allowing for that we have still four tons

hay that would be quite safe to count on providing a man gave reasonable and good attention to the workings of his land and the application of his water.

MR. DUNHAM: I want to say that the comparison I made was as I stated, the minimum yield on the irrigated land; and I also tried to be a little on the other side in the dry land. That is the reason I made the figures as they were. The only measurement I made on the farm, I thought, in an average year, was measuring out of the stack, which was sold in winter time and which was a little better than four tons to the acre. I was putting this conservative valuation to find a basis from which to get a comparison of the two methods of farming.

MR. DON BARK: This is touching a rather delicate chord with me, that is, the product of irrigated farming. I have only been here since May and I came here to stay and I think you will see more of me from now on. I have had some experience with irrigation and the marketing of the irrigation products, and I want to assure you that it is one of the problems that confront the irrigator to-day. I have seen some irrigation projects grown up from infancy. They have a habit of growing up in the United States that is sometimes too fast for their own good.

I have one project in mind in Idaho, that of the South Side Twin Falls. I was the pioneer there some ten years ago. Some of the farmers who came in there from different parts of the States seemed to think the only problem was to get the land in cultivation and crop, and they fell over themselves to get it in crop. I was working for the Twin Falls Land Company; that was after having spent several years in government service there. When I first went in there I had to pay \$20.00 a ton for alfalfa, and it was pretty poor stuff then, and they would seem to weigh it half green in the harvest and when you bought it six months later you could almost blow those bales away. Then we all thought we would get into alfalfa quick, and the whole project seemed to go into it, and it was not long before half of the project was in alfalfa, and the prices went down, down, and I put my farm into alfalfa and I was counting my chickens before they were hatched, and it brought tears to my eyes when I had to sell my alfalfa for \$3.00 a ton in the stack. That problem has been solved and the solution has been worked out by diversification of crops.

It will work it out at Lethbridge, and it will work it out here. Four years ago, half of the project was planted to alfalfa. In 1915 only fifteen per cent of the cultivated area was in alfalfa. They have 200,000 acres in the project, and some 15,000 dairy cows there. The sheep men from the hills drive in their sheep in the winter to feed them because they know they can get cheap hay, or get it at a reasonable price. There have been 200,000 sheep fed there every winter for the past five years. Some farmers are raising clover seed. There were 15,000 acres of clover seed raised there last year. There is a lot in wheat and a lot in potatoes, and the thing is being worked out in a very fair way. That is about all I want to say along that line. That is what is going to work



that problem out here. Hail or frost will not be such a bugbear and a poor year for any one product or live stock of any one particular kind will not hurt us very much. So, ladies and gentlemen, pin your faith to diversification of crops.

DELEGATE: I would like to ask you, gentlemen, if alfalfa is practical on dry land in Alberta. Now, some years ago Mr. Cameron sent one of his agents to Pittsburgh, and that reminds me of the story of the little boy that came running in to his mother one day crying, "Oh, mother, mother, come out and see the lion," and the mother said—"You know, Willie, that is only Johnny Smith's big yellow dog". She sent her little boy upstairs, telling him not to come down until he had prayed to God for forgiveness. It was not very long before the little lad came tripping downstairs and said, "I prayed to God and he said 'that is all right little boy, you run on downstairs and play, for that very dog fooled me once' ". (Laughter).

I would like to know—we are in to this dry farming business. We have heard nothing but irrigated farming, but this fellow fooled us into dry farming and if irrigated farming is what we should follow he has fooled us, and I want to know if alfalfa is practicable on dry farming. We tried it this year.

MR. DENNIS: Where?

DELEGATE: Eight miles north of here. We tried it out and this year we had very good success, and I brought a bunch in and had a placard put on it "Alfalfa grown on dry land", and do you know, that placard was removed and I don't know whether there was any object in doing so. (Laughter). We are doing the best we can, and I measured some of it and it was two feet and seven inches long, and it was produced on that land. Whether it is worthless or not, I don't know. We seeded it on the 10th of June. It was not up to the ceiling like some others that I notice here, but I thought I would show what we could do on the dry land. I would like to know whether it is practicable.

Another thing, a gentleman mentioned packing, and I would like to know whether that is beneficial. I am not kicking at Mr. Cameron on the business. We had an average of 42 bushels of wheat on 100 acres, but what I am trying to get at or get information on is that there was a 40 acre piece of that land that I have not any doubt, and neither had the threshers, at least they said so, that it produced sixty bushels to the acre. Now the other part of that, what was the trouble? The land that produced sixty bushels to the acre was ploughed in some time in May last year and worked down. The rest of it was not ploughed until after the snow, and not worked down until this spring, but what produced the good quantity of wheat was packed with a heavy packer and the other was not, and I would like to know whether there is any difference in running that packer. I am not a practical farmer, I have practised dentistry for thirty years, but the agent got me and I am up here and have my shoulder to the wheel and I am working hard at it. I want to know from

some of the practical farmers here a little about these two lines. There is no use in my spending my time and money in planting alfalfa if it is not practicable on dry land.

MR. DENNIS: Was it newly broken land?

DELEGATE: This is about the third crop. There is only about  $2\frac{1}{2}$  acres perhaps, but the question is whether I had better risk any more.

MR. DENNIS: Mr. Fairfield could probably answer your question better than anybody else because he is operating a farm under the same conditions.

MR. FAIRFIELD: I may say it comprises four hundred acres; 200 under irrigation and 200 devoted to working under dry farming conditions. The rainfall probably is somewhat similar between Medicine Hat and here. My impression is that it is very similar. We have found it does not pay to sow alfalfa on dry land when sown in the ordinary way, that is a question of cost. But when sown in rows far enough apart to cultivate between we have found it profitable, not only to raise for hay—the yield will be less on dry land—but it is a money crop when raised for seed. However, the alfalfa seed crop is always a fickle crop.

The idea of planting in rows is this, that moisture between is the controlling factor when we strike a dry season, and we only receive moisture enough to grow the alfalfa eight or ten inches high; it is not practicable to cut and rake that up because it is too short, but if we can get a good stand, but just twice as thin, then, instead of having it ten inches high, we will have it twenty inches high, and we will get a crop that we can handle. Of course it is not practicable to sow it thin, because weeds will come in, but if planted in rows where we can cultivate between, we can control the weed problem and keep them out and grow a crop that we want to grow.

Referring to the question of packing I may say that from my observation the character of the soil, I believe, decides whether packing is necessary, or whether packing will pay; or to put it the other way round, certain soils pack up better than other soils. With the soil on the Lethbridge station packing has not paid when summerfallowed for instance, in summer. The surface cultivation we can give even with one horse we find that the horses' feet going over the land makes it sufficiently firm if following spring sowing, so that we can get no advantage when we plough in the fall. On the other hand, if land is ploughed in the fall we sow in the spring.

MR. ABBOTT: As to growing alfalfa on dry land, I can say that seven years ago I seeded the first piece of alfalfa with Montana seed in the driest part of the Northwest. So under those conditions if we can grow alfalfa on dry land you will certainly grow it on this long irrigated field between Calgary and Medicine Hat. I tell you I started seven years ago and I didn't know anything about it, and in fact I consulted Mr. Fairfield a year after and he could not tell me anything about growing it in rows. I have grown it since. I have 12 acres of alfalfa that with the exception of last year, gave

me about 3 tons to the acre. This year I got 65 tons off of 12 acres and let me tell you too, although it sounds a little like 'boasting, that it was dry alfalfa, or alfalfa from a dry farm, that went to Denver and beat all the alfalfa from irrigation districts.

CHAIRMAN: Now this brings us to the end of our programme. I have an announcement or two to make; one is that a meeting of the Executive of the Western Canada Irrigation Association will be held here at the close of this meeting, and another is that a meeting of the Credential Committee consisting of Messrs. Fairfield, of Lethbridge, Brown, of Kamloops, and Abbott, of Maple Creek, will be held at the conclusion of this meeting. You who are interested in soil crops will, I think, find it worth your while to look over the exhibits of vegetables displayed in the Soils Products Exhibition Hall, in the next building.

I declare this Convention adjourned to meet to-morrow morning at 9:30 o'clock.

#### MORNING SESSION, November 24, 1915.

CHAIRMAN: This programme has been changed a little. This forenoon will be devoted to alfalfa. Because of the different features on which the three speakers will dwell, we have changed their order.

We are first going to call upon Mr. S. G. Porter, of the Irrigation Branch, Department of the Interior, Calgary, to discuss "Alfalfa, the basis of successful irrigation farming."

MR. PORTER: Mr. Chairman, Ladies and Gentlemen,—In presenting this paper on the subject assigned me I will not contend that irrigated farming cannot be successful without growing alfalfa, but I will contend and endeavour to emphasize what I believe to be a very important fact, that the growing of alfalfa is an almost unfailing index of success under irrigation. The farmer who has been successful without alfalfa will be more successful with it. On the other hand, the farmer who is prejudiced against it or opposed to alfalfa growing is most likely opposed also to rotation of crops, the raising and feeding of live stock on the farm, and is indifferent to the conservation of soil fertility. It is for these reasons that I state that alfalfa growing is the index and basis of success in irrigated farming.

As a broad definition of the term "successful farming", let us agree that it means:

- (1) Making a home on the farm.
- (2) Making a living on the farm.
- (3) Making a profit on the farm.

My duty now is to show what part alfalfa plays in attaining these objects.

#### MAKING A HOME.

The primary object of a farm is to make a home—not just a place to live—for the farmer and his family. That is not done in a day nor in a year.

Permanence must be the fundamental idea. The man who plans to exploit the soil by a few years of grain growing is not making a home on the farm and he should not be called a successful farmer, even if he makes money in the process. Unless he expects to stay on the farm he will hardly consider it worth while to spend the time and trouble of preparing his land for alfalfa and establishing a rational system of crop rotation which will properly conserve the fertility of his land. The planting of alfalfa is, in itself, an indication of permanence and as such is a move in the direction of real home building.

#### MAKING A LIVING.

Farm home-life should be the most comfortable and the most independent life possible. But to make it so you must have real cows and not canned milk; real pork and chickens and eggs, not Chicago cured or tinned meats. In other words you have got to have cows, pigs, chickens and the other essentials for comfortable living. It is amazing how many farmers fail in this. And the one reason above all others responsible for it is the one-crop system of farming. A proper diversity of crops and the feeding of live stock on the farm is the logical remedy.

Here is where alfalfa comes in strong. It is the best all-round feed in existence for cattle, sheep and hogs. If it is given the prominence it deserves and other crops are grown in a rotation system which will properly balance your farming and feeding requirements, you will have the essentials for a comfortable living, not a mere existence.

It is a good individual principle and a good national policy to be self-supporting. Let us adopt this as a slogan:

Make Canadian farms feed Canada.

Make Alberta farms feed Alberta.

Make your farm feed you.

#### MAKING A PROFIT.

While making a profit is not the chief purpose of life nor of farming, still it is the accepted measure of business success. How to make a profit out of the soil is the farmers' business problem.

"Every farm is a factory," and "the fertility of the soil is the capital stock." How to make the factory most productive is the proposition. You certainly cannot draw on your capital stock to pay dividends. In other words it will not do to fool yourself into using up your soil fertility and calling it profit. The capital stock, or fertility, of Western Canada's soils is nearly always rich, but it will not continue so under the usual one-crop method of farming.

To make farming profitable then, soil fertility must be maintained. Let us examine the requirements and note the importance of alfalfa in maintaining it.

There are some thirteen elements used as food by plants, the principal ones between nitrogen, phosphoric acid and potash. Nitrogen is in many respects the most important. It is absolutely essential to plant life. If the soil



does not contain it, it must be supplied. At the same time it is the most costly element to be supplied if the farmer has to buy it and put it in the soil. Being also more soluble than the other elements it is more easily washed out and is usually the first element to become exhausted. Therefore, its continual renewal is an absolute necessity in maintaining soil fertility.

There are three principal means of restoring nitrogen to depleted soils:

(1) The use of commercial fertilizers. This is very expensive and under the conditions which prevail here unnecessary.

(2) The application of barnyard manure. This is very important and even more valuable than is commonly recognized.

(3) Growing leguminous crops such as alfalfa or field peas which take the nitrogen from the air and store it in the plants.

Alfalfa in common with other plants known as legumes requires much more nitrogen than other crops, but fortunately they have the faculty not possessed by other plants of absorbing a big part of their supply from the air. Instead, therefore, of depleting the soil of its nitrogen, they add to it. The alfalfa plant is rich in nitrogen and if ploughed under as a green manure each ton has the value of four tons of barnyard manure. But nearly one-half the weight of the alfalfa plant is in the root, so that it produces a green manure crop under ground in addition to the hay crop above ground. It thus lessens the necessity of ploughing under a growing crop for manuring purposes. If in addition to this the hay crop is fed on the farm and the manure returned to the soil, there is no necessity of ploughing under a growing crop in order to preserve the soil fertility.

The second argument for alfalfa is conserving soil fertility and making farming profitable is its importance in crop rotation.

Crops have different food requirements. The long continued growth of the same crop exhausts the food elements particularly adapted to that crop and unless these elements are restored, crop returns will invariably diminish. The dangers of plant disease and insect pests are also increased where the ground is used over and over for the same crop. Hence the advantage of crop rotation.

From the standpoint of their effect upon the soil and the yield of succeeding crops in rotation, crops may be divided into three classes, namely: Exhaustive, such as grains and flax; stimulative, such as potatoes and other tilled crops; and restorative, such as grasses, peas, clover and alfalfa. Alfalfa is the best restorative crop for irrigated land. It leaves the soil in better condition for the crops that are to follow than it was before.

The irrigation farmer has a big advantage over his dry-farming neighbour in respect to carrying out an ideal system of rotation. To be most successful the system must include alfalfa growing and alfalfa demands irrigation. But rotation alone, even where alfalfa is included, is not sufficient. The ground needs manure. Therefore, if you will add stock raising to the alfalfa growing you have the fundamental requirements for a successful system.

A programme which includes alfalfa growing, rotation of crops and live stock feeding, furthermore, is an indication of system and better business methods in general as well as better farming in particular. It requires definite planning of work in advance, together with more intelligent estimates of outlay and returns. The one-crop system means not only poor soil but poor people.

My third argument for alfalfa is its high feed value for live stock. I have already pointed out the necessity of raising live stock on the farm and utilizing the manure in order to maintain the fertility of the soil and make farming profitable. I wish to emphasize this a little further.

(1) Feeding your crops gives greater profits. While alfalfa sold as hay will usually prove more profitable than grain, it is not as a hay crop directly that the big profits are made. When fed to live stock the returns are three or four times as great as when sold as hay and when the manure value is added the ratio runs up to five or six. For milk cows alfalfa is equal to bran and can be produced at one-fourth the cost. It will add from 15 to 30 per cent to the profits of dairying over the use of any other feed you can raise or buy. The returns when fed to dairy cows, are often as high as \$25.00 to \$40.00 per ton in addition to its direct and indirect fertilizing value.

If you would market your crops to best advantage, manufacture them into milk, beef, pork and mutton. "Grow what you feed and feed it. Don't sell it."

But you may object that there will be an over production of alfalfa if the principles I am advocating are carried out. There is no crop which presents less danger of congestion and over-supply in Western Canada than alfalfa. The ease with which it can be handled by the farmer himself without elaborate or expensive equipment and the many profitable uses to which it can be put make it less likely that the alfalfa grower will find himself at the mercy of congested markets and overcrowded transportation facilities than the grain grower, the fruit producer or any other one-crop farmer.

The greatest returns accrue from feeding it on the farm and it is essential that the stock feeding industry be developed parallel with alfalfa growing. But that is not the only manner of disposal. Wherever the supply exceeds the normal local demands, the alfalfa can be ground into meal for shipment to eastern markets at a profit both to the farmer and to the miller. The establishment of alfalfa meal mills will give a cash market at profitable prices for an almost unlimited amount of high grade alfalfa and at the same time materially assist in the industrial development of the community.

(2) Feeding live stock utilizes much roughage for which there is no market. It makes use of the by-products of farming. Remember it is the use of the by-products of big industries that have made men rich. Where no live stock are fed there is a tremendous waste on the farm which should be avoided.

(3) It returns the fertility to the soil and makes bigger crops. No soil is so fertile but that continued cropping without returning plant food to it in

some manner will eventually ruin it. I am still speaking on the general topic of making a profit on the farm. I have already pointed out that you cannot use up your capital stock, which is your soil fertility, and call it profit. Before determining the profits from any crop produced on the farm it is necessary to estimate the loss in fertility to the land which produces it. This factor is too often disregarded. Profits in farming are more dependent upon soil fertility and its maintenance than upon any other factor.

Each crop taken from the soil removes some of its fertilizing constituents. At average prices of fertilizers a bushel of wheat removes from the soil 26 cents worth of fertility; a bushel of oats, 13 cents worth. If you grow 25 bushels of wheat or 50 bushels of oats per acre and sell them as such, you are selling \$6.50 worth of fertility from each acre of your land and reducing your capital stock by that amount. Likewise with other crops in varying amounts.

Now it has been demonstrated scientifically that when grains and hays are fed to farm animals from 80 to 90 per cent of the fertilizing constituents of the foods which are fed may be recovered to the land. This means that of the \$6.50 worth of fertility taken from the soil, more than \$5.00 worth may be returned. In other words you are recovering in manure value alone an equivalent of nearly 20 cents a bushel on your wheat and 10 cents on your oats.

But grain alone cannot be utilized in this way even if there were no other drawbacks to continuous grain cropping. On the other hand alfalfa in addition to its general advantages in crop rotation and soil fertilization is the best farm stock feed in existence.

While it requires about the same amount of fertilizing constituents to produce a single ton of alfalfa as to produce 25 bushels of wheat or 50 bushels of oats, the fact that a big part of it is drawn from the air and from the subsoil below the reach of ordinary crops explains why it does not deplete the soil fertility in the same ratio as other crops. A three-ton crop represents about \$40.00 worth of fertilizing constituents per acre and when fed on the farm returns \$30.00 per acre. Now the beneficial effects of growing alfalfa in rotation with other crops more than outweigh its consumption of fertilizing constituents in the soil, leaving the indirect gain acquired through the return of manure to the soil as a clear credit to soil fertility. It may appear to be an extravagant statement when I say that the fertilizing value of the manure from a ton of alfalfa fed to stock on the farm is \$10.00, or that an acre of land producing three tons of alfalfa will return \$30.00 worth of fertility to the soil when fed on the farm, but scientific investigations have proved that it is true.

Mr. W. J. Spillman of the U. S. Department of Agriculture says, "No system of agriculture has ever been permanently profitable without the use of domestic animals as a means of maintaining the productiveness of the soil."

(4) Raising and feeding alfalfa means living on the farm. Live stock raising cannot be left to other hands. The owner must give his own time and attention to it. Such operations are primarily adapted to the small farm personally conducted. And when a man makes the farm his home and deter-

mines to have a real home with the comforts which he is entitled to, he is going to interest himself in putting up better buildings and making the place more attractive than he would for a tenant. He is also going to co-operate with his neighbours in having better roads, better schools, better social advantages, a better civilization. Co-operative organizations for better markets become possible and a prosperous community is built up. These things do not come in a community of large non-resident holdings operated by tenants or hired men on a one-crop system of farming.

(5) Alfalfa growing and stock-feeding distribute labour more uniformly through the year.

I have stated that every farm is a factory. It is a business proposition and must be conducted on business principles. One of these principles which must be given due consideration is the steadiness of employment of your labour and capital. The factory that runs only half time or at half capacity is not likely to be profitable. The one crop farmer is doing both these things; then how can he logically expect success? So long as he neglects proper rotation methods and the utilization of manure from live stock feeding he is working his factory at half capacity. So long as he is crowding the operations of the entire year into a brief working season he is working it on half time. No other business would expect to succeed under such conditions. Are we not safe in concluding that this is the principal reason why farming is not more successful? A system that leaves practically the entire plant, including expensive equipment and work stock, together with his own time and labour, non-productive during a long period each year cannot be an efficient or profitable system.

Fewer acres of land and more live stock, a diversity of crops, with a few cattle, pigs and chickens, and a few good dairy cows will give profitable employment the year round for all members of the family, produce a steady income and a comfortable, independent home life on the farm. (Applause)

MR. SPEAKMAN: Will you allow me one remark on the address delivered? I cannot help saying it is a most splendid address. There is only one point I want to speak on and that is regarding the alfalfa meal. The speaker said we would have good markets in the East, but it did not appear in our addresses that we have made any success in this direction, but it has been ground in southern Alberta and has not had to be sent east to the market. It has been shipped to Red Deer to feed stock there, and I think if it develops on irrigated farms in southern Alberta as I expect it will, when it increases we will have a considerable market right in Alberta when that alfalfa meal is forthcoming.

MR. JOHNSTONE: I would like to know what results have been obtained by growing alfalfa in an orchard. A good deal of discussion will take place on that line, likely, but I would like to hear some information about it.

CHAIRMAN: Mr. Fairfield is the next speaker, and he will probably be able to say something on that. Mr. Fairfield will discuss "Crop rotation on



irrigated land". I have now much pleasure in introducing Mr. W. H. Fairfield, Superintendent, Dominion Experimental Farm, Lethbridge.

MR. PEARCE: I would like that the Secretary should read the Resolutions that have been before the Resolution Committee, owing to the fact that one gentleman who has moved a resolution has to go away at one o'clock, and might wish to say something.

CHAIRMAN: We will have the report of the Resolution Committee before Mr. Fairfield makes his address.

Moved by S. S. Dunham,

Seconded by G. R. Marnoch,

Whereas, the majority of the farmers in the proposed Lethbridge Northern Irrigation project have already expressed themselves as being desirous that this project should be carried into effect at the earliest possible date, and,

Whereas, the extraordinary high yields of grain this year throughout that District have confirmed by practical results the latent fertility of their lands when supplied with necessary amounts of moisture, and,

Whereas, their experience in past years points to the probability that in future years, there may be deficiency of moisture, and,

Whereas, these farmers are satisfied by their visits to the farms in the irrigation districts south of Lethbridge that they too could grow highly profitable crops of alfalfa, hay, etc., and insure crops on such lands as they might retain under grain, and,

Whereas, the preliminary surveys carried out by the Irrigation Branch of the Department of the Interior have demonstrated that irrigation facilities could be extended at reasonable cost to other areas east and south of Lethbridge in which soil and climatic conditions are similar to those in the successful Lethbridge Irrigation district, these areas totalling approximately 350,000 acres, therefore be it,

Resolved that the Western Canada Irrigation Association respectfully **urge** the Dominion Government to diligently proceed with the surveys in the districts indicated, so that the farming communities may be enabled to proceed to take steps to avail themselves of the benefits of irrigation without any avoidable delay.

And the Association directs that, copies of this Resolution be forwarded to the Premier, Sir R. L. Borden and to the Hon. Dr. Roche.

CHAIRMAN: You have heard this resolution read and recommended by the Resolution Committee which has been moved by S. S. Dunham and seconded by G. R. Marnoch. All in favour will signify their intention by raising their right hand.

Carried.

Moved by C. W. Peterson,

Seconded by N. S. Rankin,

Whereas irrigation development in the prairie section of Western Canada will necessarily depend upon the extension of animal husbandry in all its branches, and

Whereas the history of irrigation development elsewhere indicates that alfalfa is overwhelmingly the most important and remunerative fodder crop produced under artificial watering.

Therefore be it resolved:

(1) That the Dominion and Provincial Departments of Agriculture of Alberta, Saskatchewan and British Columbia be petitioned to initiate a wide-spread system of popular co-operative experiments with alfalfa on the basis of supplying seed to such farmers as have available well prepared and otherwise suitable areas under irrigation.

(2) Such plots to be of a minimum area of five acres and the preparation of the land, seeding, inoculation, and further treatment to be performed under the direction of departmental experts.

(3) That at the end of the season reports upon these plots, properly illustrated, be published and mailed to all holders of irrigable lands.

(4) That a well directed and energetic educational propaganda be initiated by the Departments of Agriculture to convince settlers on irrigated lands generally that the only road to complete success lies through the alfalfa field, into the breeding and feeding of live stock.

(5) That copies of this resolution be sent to the Dominion and Provincial Ministers of Agriculture affected.

CHAIRMAN: So far as the province of Alberta is concerned this is not necessary. We began this propaganda in connection with alfalfa over a year ago, and we decided that the best way to get it grown in the different parts of the province was to aid alfalfa, and we offered three prizes in our schools of agriculture to the boys who grew the best bushel of alfalfa seed, and some seventy or eighty boys began growing alfalfa seed under the Professors of Field Husbandry in each of the schools, so that now these boys have plots of alfalfa growing from Athabaska on the north to the southern portion of Alberta. These are being grown by boys under the direction of Professors in Field Husbandry. We started in well by getting Alberta grown seed so as to get seed native to the province, and Mr. McGregor, who is in the room today, was good enough to make a present of the alfalfa seed to the boys. I think as far as our province is concerned, we have started the propaganda pretty well. I don't know what the other provinces have done. It will do no harm to pass the resolution. However, it is a good thing to tell the Governments what to do.

Resolution carried.

CHAIRMAN: Now, we will call upon Mr. Fairfield for his address.

MR. FAIRFIELD: Mr. Chairman, Ladies and Gentlemen: Mr. Porter in concluding spoke of the advantages of being able to give employment the year

round to all members of the family. When I was a boy living on the farm and happened to hear such a statement, it gave me the same depressed feeling I used to have when I heard that old hymn entitled "Every Day will be Sunday by and by."

I used to think there was enough work already and it was not until years later when I was farming for myself on a straight grain farm that I began to realize the real significance of remunerative work in the winter. When the crop was threshed and sold in the fall it took about all the returns to straighten up back accounts. Then there was a whole year with practically nothing coming in, and try as we would to economize, the debts that would have to be liquidated with the coming crop would pile up. One day in the early part of a certain winter a milk vendor came out to see if he could get some milk from us, and we agreed to let him have the product from the half dozen cows we were milking at the time. We began giving the cows special attention with reference to their feed, and at the end of the first month, received a check for \$60.00. We also received with it an impetus to do a little thinking, the result of which was that from that time we never had to draw on the money received at threshing time to pay operating expenses.

In introducing my remarks on a subject dealing with diversified farming, I am sure you will pardon me for making this personal reference, but it was just this experience that first taught me the advantage of a winter revenue as well as enough each month in the summer to pay all current operating expenses. But mark you, it was the revenue that appealed to me, not the work, although one finds oneself accepting that quite complacently.

In passing, I might add that I can think more philosophically than I could as a boy concerning all those Sundays in the "by and by", for I fancy we will be provided with something more remunerative than straining our energies at finding something to do that was not forbidden on the Sabbath, as was the case when we were children.

The previous speaker has shown most clearly the need of crop rotation in a system of farming that makes for permanency and stability. Our country is too new for us yet to see many examples of the evils of continuous grain growing, but for such we have only to look at the history of the older farming districts on this continent that started as we are doing with all the natural resources that a virgin soil can offer.

The thing about a proper rotation that really appeals is not that it is the right thing to do, but because it pays. It is a similar case to those cows I was just speaking of. We found they paid so we stuck to them. So with crop rotation, when a farmer starts along proper lines he finds it pays and he sticks. So in discussing rotations suitable for irrigated land in southern Alberta, we propose to view the question from the dollars and cents standpoint and deal mainly with facts. Any additional support that we can offer from the standpoint of theory will be merely incidental.

On an irrigated farm, to raise but one kind of crop such as grain successfully is almost an impossibility, because in our short seasons it is not possible

to get the land all irrigated at the proper time. Diversified crops are therefore a necessity from this standpoint alone. If farming is to be carried on successfully on irrigated land it has been found that it must be done more intensively than under dry farming conditions, for with the added cost entailed by the labour of applying the water as well as the annual cost of the water itself, greater gross returns per acre must be obtained, otherwise it is not a paying venture. I propose before finishing to show how these added returns can be obtained by rotating the crops in an intelligent manner.

The principal reason for using legumes in a rotation, as has been so well explained in the previous paper, is to add plant food to the soil in the form of nitrogen. As in all arid and semi-arid districts our soil is comparatively rich in the mineral constituents required in plant food, owing to the fact that the limited rainfall during past ages has not leached them out as is continually being done in humid districts. On the other hand we have relatively less decomposed vegetable matter, the main source of nitrogen in the soil, owing to the more limited growth of vegetation in the past.

Of all the legumes now grown in temperate climates there is none that has a more markedly beneficial effect on the soil than has alfalfa. It is not used as generally in the East as are the common clovers, for the reason that it does not thrive as well in the East as it does in the western half of the continent. I shall not take the time to enumerate the reasons why this is the case, but will merely say that alfalfa is a "sunshine plant." With plenty of bright sunshine and a reasonable amount of heat and moisture it grows as we can get no other similar plant to grow.

Fortunately it is peculiarly adapted to irrigation. Drought in any particular time during the season does not affect it beyond the fact that it makes no growth at that particular time. Timothy illustrates well the point I want to make. As you well know, if timothy sod is dry in May and early June it will give an extremely light crop no matter how wet it may be kept during the rest of the season. With alfalfa on the other hand, while no growth may be made while it is dry, the moment moisture is applied, it starts to grow at once and grows just as vigorously as if it had never dried out. It yields heavier here than do the clovers. It is deeper rooted, not only drawing its nourishment from deeper down but opens up the subsoil by boring down with its roots so that the subsoil is in a much better mechanical condition for other crops when the alfalfa is ploughed up.

On the Lethbridge Experimental station a ten year rotation was established in 1911. Ten fields of one acre each were carefully measured off. If one established a similar rotation on a quarter section each field would of course be 16 acres instead of one, but the results obtained should be the same.

The arrangement of crops is as follows: Six fields are in alfalfa; each year one field of alfalfa is ploughed up and one field is seeded down. On the alfalfa sod a hoed crop is planted; we have used potatoes, but sugar beets, corn, turnips or mangels, or in fact any hoed crop the farmer might desire could be



used. After the hoed crop, wheat is sown. The wheat is followed with oats, the oats with barley, and after the barley the field is seeded down again.

The table given on the chart presents a summary of the more important results obtained since the rotation has been established. The figures represent the average yield for the past four years, i.e., 1912 to 1915 inclusive, and are therefore much more reliable than would be the case if only one or two seasons' results were used.

TABLE

Crop in Land the Year Previous.	Crop	Yield of Grain & Potatoes per acre Bus.	Yield of Hay per acre Tons.	Total Cost per acre \$	Total Value per acre \$	Profit or Loss per acre \$
Barley	Alfalfa Seeding		.8	10.69	9.40	1.29
Alfalfa Seeding	Alfalfa Hay		4.2	12.70	50.10	37.40
Alfalfa Hay	Alfalfa Hay		5.1	13.12	61.07	47.95
Alfalfa Hay	Alfalfa Hay		5.1	13.24	61.57	48.33
Alfalfa Hay	Alfalfa Hay		5.0	13.27	60.14	46.87
Alfalfa Hay	Alfalfa Hay		5.4	13.47	65.12	51.65
Alfalfa Hay	Potatoes	607.0		70.77	300.96	230.19
Potatoes	Wheat	54.5		13.52	43.30	29.78
Wheat	Oats	83.0		13.49	30.83	17.34
Oats	Barley	43.7		12.29	22.83	10.54

It will be noticed that 6-10ths of the total area is in alfalfa. There are two reasons why such a large area is seeded down. One is that we consider alfalfa the most profitable crop to raise and the other is that alfalfa does not lend itself well to a short rotation because it takes at least two years before it establishes itself in a manner to give maximum yields, and, owing to the cost of seed, it is more economical to allow it to stand a reasonable length of time after it is once started. The return values used in arriving at the figures given are:

Potatoes .....	50c per bushel
Wheat .....	80c per bushel
Oats .....	34c per bushel
Barley .....	48c per bushel

As will be noticed, barley has given the lowest yield and oats the next lowest. This is what could be expected when one considers that the figures given are an average of the first four years that the rotation has been established. Alfalfa has never grown on the fields in which barley was planted till 1915. Oats have only been planted two seasons in fields on which alfalfa has been grown. However, taking them even as they are, the yields are good and without question, especially in the case of barley, the returns from now on will be greater. The exceptionally high yields of potatoes deserve special no-

tice. They have, of course, been planted on alfalfa sod each season, and there is perhaps no better preparation that can be given a crop of potatoes than ploughing up a field of alfalfa.

In this rotation the land is manured once in ten years. It is applied on the alfalfa sod the last year it is in hay, being put on in the fall. This perhaps accounts for the increased yield of hay which you will notice amounts to from .3 to .4 of a ton. By applying manure at the rate of 12 tons per acre on but one field each year a farmer is only treating one-tenth of his farm, which should not be too much if any reasonable amount of feeding is done.

If an irrigation farmer has over half his land in alfalfa each year, the natural question is how shall he market it? The real solution of this problem, for various reasons, is to feed it on the farm. Dairying is the most profitable way of feeding it, but experiments carried on at the Lethbridge station for the past few winters have demonstrated that it can be most advantageously disposed of by winter feeding of cattle and sheep.

TABLE

With alfalfa hay at \$12.00 per ton the following profits were made:

Winter	Average Profit Per Head	
	Cattle	Sheep
1911-12.....	\$	\$1.35
1912-13.....	10.37	.56
1913-14.....	9.14	1.38
1914-15.....	2.37	1.30
Total Average .....	7.29	1.15

The table shown on the chart gives the average profit per head made in the feeding operation with both cattle and sheep when alfalfa hay is charged at \$12.00 per ton and grain (barley and oats) at 1 cent per pound. The object of these tests is to determine first, whether alfalfa can be fed profitably, and secondly, just the best combinations of other feeds to make to get the best results. There will not be time to deal with the second problem. The chart was prepared with the object of showing just what the results of our experiments have been in attempting to market alfalfa in the form of beef and mutton. Complete details regarding these experiments have been published and can be obtained by applying to the Lethbridge Experimental station.

In these experiments the feed has been charged at the prices mentioned, but no charge has been made for labour. The price of the hay is put high enough so that a farmer can afford to feed it. If he were selling it he would have to bale and deliver on cars, the cost of which we consider about offsets the trouble of feeding it. When fed, the manure is left on the farm, which in the long run cannot well be ignored.

I think I have made myself clear in regard to the profit shown, this is what is left after all feed is charged for. In other words, if a farmer just broke even he would still sell his hay at \$12.00 per ton. The total average profit per

head of \$7.29 for the steers and \$1.15 on the sheep is his leeway and to protect him on any chances he has to take on an unfavourable market and interest on the money he has invested in the stock for the three or four months he has them in his possession. There are a number of interesting points in connection with winter feeding which time will not permit me taking up, but if there are any questions I shall be glad to answer them as well as I can during the discussion that is to follow.

In conclusion I may say that in my opinion our irrigated farms will not reach their maximum production till each farmer adopts a practical rotation and follows it up consistently. In it alfalfa should play a very important part not only because it is a profitable crop in itself, but because the mere growing of it will build up the productivity of his soil to a very high point. So far in this country we are putting in alfalfa for the crop itself, but I venture to say that there is a distinct surprise in store for the farmer himself and for the general public when they see the almost magical way alfalfa has of increasing the yields of ordinary field crops when it is ploughed up. (Applause)

CHAIRMAN: We will now call on Mr. Don H. Bark, formerly in charge of United States Irrigation Investigations in Idaho, who is to continue this discussion by speaking on "The Growing of Alfalfa."

### ALFALFA GROWING

MR. BARK: Alfalfa has now been grown successfully throughout Alberta for a sufficient number of years so that it may be said to have passed the experimental stage. There is no doubt but that it now occupies a permanent place among the staple forage crops of the province. This plant is easily the King of forage plants, for no other forage contains so many essentials of merit. It not only excels all other forage plants both in yield and in feeding value, but also in its beneficial effect on the soil. Alfalfa produces more food value for less cost than any other crop we can raise. Indeed, too much can hardly be said in praise of this wonderful plant, and if history repeats itself, the time is not far distant when it will become the predominating crop on every irrigated farm in the province. As one of the great benefits secured from alfalfa is its great improvement in the fertility of the soil, it seems well in discussing the subject to deal for a moment with the fundamental principles of soil fertility, in order to show more clearly the beneficial influence of alfalfa upon our arid soils.

### PRINCIPLES OF SOIL FERTILITY.

Of the many elements found in the soil, four only are used to any considerable extent by the plants. These four are nitrogen, potash, phosphoric acid and lime. Nitrogen itself is a gas and forms a large part of the air we breathe, but plants cannot utilize it in this form. It must be combined with other elements in the form of a salt (nitrate) before it becomes available as a plant food. The last three mentioned plant foods are minerals formed by the

breaking up and decomposition of the parent rock, of which the soil was originally formed. These four substances are the principal or most important of the plant foods. Crops not only need far more of them than all the rest, but good yields cannot be produced upon any soil in which one or more of these elements are either deficient or entirely lacking. The plants obtain these substances from the soil in solution in the water absorbed by the plant roots. Only such of these elements or compounds therefore as are soluble in water are for the time being available as plant foods, for the plants can neither absorb solid particles of plant food into their roots nor could they utilize them in this shape if they could.

All soil is primarily decomposed rock, the particles of which it is composed varying in size and fineness from the coarsest of gravel to particles so small that sometimes forty thousand would have to be laid side by side to make an inch. Soils as we commonly know them, however, are more or less mixed with vegetable matter in various stages of decomposition. This decomposed vegetable matter is commonly called humus, and is the principal source of that most important plant food, nitrogen, the mineral plant foods being derived from the parent rock. Now let us stop for a moment to note the difference between the soils of a humid country and of an arid or semi-arid one. The rains of centuries in the humid belt have caused a luxuriant vegetation to grow, which dying down each year, has added a world of humus and nitrogen to these soils, but these same rains have meanwhile leached out enormous amounts of soluble mineral plant foods. The soils of humid countries are therefore rich in humus and nitrogen, but comparatively poor in the mineral plant foods, while the soils of arid and semi-arid countries are almost diametrically opposite, for it has never rained sufficiently to either grow the luxuriant vegetation or to leach out the mineral plant foods. The soils of the arid and semi-arid regions are therefore rich in mineral plant foods, for they still have all that was originally contained in the parent rock, but they are quite liable to be deficient in nitrogen. It can be seen therefore that whenever the eastern or humid soil becomes worn out or run down, the addition of mineral plant foods is necessary. This can only be accomplished by the purchase and application of expensive commercial fertilizers. Arid and semi-arid soils, however, rarely need the addition of such fertilizers, for they have more mineral plant foods than the humid soils had a million years ago, but their supply of nitrogen and humus is normally only sufficient to last for but a few crops, when it must needs be replenished. And we are indeed fortunate that this can be so easily and cheaply done through the growing of that valuable plant alfalfa.

If we take pains to keep up the supply of nitrogen in our soil, we are far better off on an irrigated farm in Alberta than any one can ever possibly be on a farm in the humid belt, for with our soil far richer in the necessary plant foods, with our longer days of sunshine, and our ability to control the supply of moisture to the crops, giving them just what they need, and above all, when they need it, we can always grow larger crops and secure larger profits than can be secured anywhere in the humid belt, for the farmers in this belt have



neither the rich soil, the same amount of sunshine, nor the ability to control the amount of moisture in the soil, which is so necessary to maximum crop production. We must, however, grow alfalfa, for as I shall explain later on, it adds more nitrogen to the soil than any other crop we can grow.



Alfalfa, a Revenue Producer and Soil Enricher.

#### TYPE OF SOIL REQUIRED.

Alfalfa has been known to grow and do well on a very large variety of soils. It, however, has its preference, and usually does better on the lighter soils consisting of the sandy, sandy loam and clay loam. Even in districts having the heavier soils most farms contain one or more classes of soil, and in such cases the alfalfa should be planted on the lighter or more sandy soil. I should not hesitate, however, in planting alfalfa even though my farm consisted of all heavy soil. The one thing that alfalfa will not stand is wet, soggy soil. Though it requires considerable precipitation or irrigation water throughout the season, it prefers a well drained soil. If those desirous of planting alfalfa upon heavy soils will select the higher and better drained portions of their farm for this crop, but little difficulty will usually be experienced. Never plant alfalfa in the bottom of a depression that does not have surface drainage.

#### PREPARATION OF GROUND FOR IRRIGATION.

There are two types of irrigation systems adapted to alfalfa in this province, namely,—free flooding and flooding between borders, though the furrow or corrugation system might be used to some advantage in certain districts. Free flooding consists of flooding water between more or less parallel head ditches, spaced from fifty to two hundred feet apart. With this system, as

with all others, if efficient irrigation is desired, all knolls and depressions must be removed, so that water can run uninterruptedly without pooling up from one head ditch to the next one below it. The larger knolls and depressions should be smoothed off with a Fresno scraper, as this tool, where the haul is short, will move quicker and cheaper than any other implement in common use. After the larger knolls and depressions have been smoothed off with a scraper, a rectangular leveller, with which you all should be familiar, should be run over the ground, both lengthwise and crosswise of the field.

The head ditches with free flooding should be run on a uniform of grade of from one-tenth to three-tenths of a foot fall per hundred feet. They should be installed more or less parallel to one another, the proper distance between them depending somewhat upon the topography and nature of the soil. From fifty to two hundred feet apart has been found to be the proper spacing for this section. One ditch should be used at a time for the irrigation, the water being dammed up at frequent intervals by canvas dams, and turned out into the field through notches cut with the shovel in the lower ditch bank by the irrigator. If the levelling has been carefully done, and the irrigator gives the water careful attention, very efficient irrigation can be accomplished by this system. There should not be much waste water, but whatever water that is wasted should be caught up in the next ditch below and used for the irrigation of the next strip.



The use of a Canvas Dam.

#### FLOODING BETWEEN BORDERS.

This system is probably best adapted for alfalfa on practically all of the various types of soil found in the province.

So far as topography is concerned, it can be used on all but the steeper grades, approximately one hundred feet per mile being the maximum slope with which it should be used for alfalfa. The head ditches with this system are constructed in about the same manner and about the same or a little greater distance apart as with the free flooding system. The only essential difference between this system and the free flooding system is that more or less parallel border guiding dykes are constructed 30 to 60 feet apart between the head ditches, and more or less at right angles to them. The water is checked up in the ditch with canvas dams as before, and is flooded between the border guiding dykes to the next head ditch below, the dykes guiding and controlling the water in a much more efficient manner than with the free flooding, where the water is unconfined, and requires careful attention from the irrigator. To be ideally laid out for irrigation by this system the side fall should be taken out of each strip—in other words it should be made approximately level cross-wise throughout its length. It is not necessary, however, to make the length-wise slope uniform, it simply being necessary, the same as with the free flooding system, to smooth off the knolls and depressions sufficiently so that water may run uninterruptedly from one head ditch to the next one below. In actual practice where the land is not too steep these parallel border guiding dykes usually run down the greatest slope, for this is the direction the water will naturally run with the least attention. There will also be less side fall in each strip than as if the border dykes angled down the slope. The dykes are usually constructed at the time the levelling is done, the dirt being deposited on the location of the dykes by the Fresno. Where but little Fresno work is necessary the dykes are made by ploughing a back furrow consisting of two or four furrows on the proposed location of each dyke. The dykes are afterwards gone over by a ridger, which is run lengthwise of the back furrow. This ridger consists essentially of two 2x12 planks, 16 to 18 feet long, placed on edge with a spread in front of from 12 to 14 feet and only approximately 3 feet behind. The wide end is pulled ahead, thus gathering a shallow layer of dirt from quite a wide area on each side of the back furrow, the dirt being pulled against the side of the back furrow by the sloping sides of the ridger. These ridges are afterwards smoothed down and rounded over by harrowing them lightly, the alfalfa being planted across the top of the ridges in the same way and at the same rate as between. If these ridges are constructed in this manner they will be high enough to control the water, yet broad and low enough so that alfalfa will grow on the tops of them, and the wagons and hay tools can cross them with no inconvenience whatever. The ridges when completed should be from 6 to 9 inches high in the centre and from 2 to 3 feet broad at the base.

In practice the water is turned into the head of each strip at two or more places and spreads quite uniformly between the two guiding dykes, as it advances across the strip. The irrigator should cut it off and turn it into the next strip below as soon as the water has advanced far enough so that the quantity in the strip will advance to the lower end and thoroughly irrigate the bottom portion.

This system is a very efficient one, for not only alfalfa but all other grasses, and provided the ground is properly prepared for it at the start, it will be found that the water will actually require less attention and that more acres can be irrigated in a day with less water and less work than by means of any other system.

#### PREPARATION OF SEED BED.

The preparation of a proper seed bed for alfalfa is very important. Alfalfa has a small seed, and the plant for the first two or three months is rather weak and puny. It therefore requires a well cultivated seed bed, for a good stand cannot be secured if it is planted in rough, cloddy ground. Alfalfa plants are quite spindling and grow so slowly during the first two or three months of their growth that the weeds in a very weedy field will sometimes either entirely crowd out the alfalfa or be the means of securing a very thin stand. It is best therefore to plant alfalfa on a tract of land that is as free from weeds as possible. Land that has been summer-fallowed the previous year, or that has produced potatoes or other rowed crops is best adopted for alfalfa, as it will be the freest from weeds. Grain land that is fairly free from weeds is also well adapted for alfalfa provided it has been in cultivation long enough to disintegrate the sod. Do not plant alfalfa on new breaking, as the prairie and other grasses will not let the alfalfa secure a good quick start.

#### INOCULATION.

As was mentioned in the introduction, alfalfa has the power of supplying nitrogen to the soil, and it is a good thing Providence provided this plant with this power, for if it did not have it there would be but few soils sufficiently rich in nitrogen to grow the crop for any length of time. This same thing would probably hold true to a somewhat lesser extent with the other leguminous crops, for they all contain a large amount of nitrogen or protein. They therefore must be able to secure a large amount of it from the soil. The manner in which alfalfa and the other legumes supply nitrogen to the soil is through the bacteria which live in and upon their roots. These bacteria are not originally present in all soils, for these particular bacteria cannot live without legumes, nor can the legumes live for any length of time without the bacteria, the principal reason being that the legume is such a greedy feeder upon the nitrogen in the soil that unless the bacteria are present, it soon exhausts the available nitrogen in almost any soil. While all legumes harbour bacteria of much the same nature, it has been found that there are certain kinds that prefer each particular leguminous plant. This is probably due to the fact that these particular bacteria have adapted themselves to this plant. These bacteria are so small that they can scarcely be seen with even a microscope of the highest power. It is believed that they are absorbed by the minute root hairs along with the water, and after being absorbed irritate the roots to such an extent that plant juices are automatically thrown out at the spot, thus forming the



little appendages called nodules in which the bacteria live. These nodules vary with alfalfa from small whitish lobes the size of a pin head to clustres of these lobes one half inch in diameter arranged somewhat like a bunch of grapes. These bacteria after becoming domiciled in the nodules attached to the roots multiply at an extremely rapid rate, and are able to absorb the free nitrogen found in the air spaces of the soil, and work it over into nitrates, a definite chemical compound and a plant food of the highest value, in which shape the alfalfa itself or any other plant can utilize it. These bacteria therefore are very essential to alfalfa, no matter where it is grown. In the soils of certain districts throughout the West it seems there are enough of these alfalfa bacteria or other bacteria of a similar nature that can readily adapt themselves to the alfalfa plant, so that it is unnecessary to inoculate the alfalfa at the time of planting. Such is not the case here, however, though the continued planting of alfalfa on our irrigation projects may in time develop these bacteria so that they will become so widely scattered throughout the soil that it will be found unnecessary to supply them artificially.

The best method found to date of supplying these bacteria to our alfalfa fields is to secure surface soil to a depth of nine or twelve inches from an old, well-established alfalfa field that has become well inoculated, and to scatter this soil evenly at the rate of from 200 to 400 pounds per acre upon the field after it has been prepared for alfalfa, and immediately before seeding. Failure to do this and take the proper precautions after it has been done has probably been the cause of a greater number of failures with alfalfa in this part of Alberta than all other causes taken together. These bacteria can stand very low temperatures, even 20 or 30 degrees below zero will not kill them, but either bright sunlight for a few moments or a continued temperature for a few hours of 100 or more degrees Fahrenheit will kill them very readily. It is therefore very necessary to secure the original soil in a fresh condition, to keep it in a comparatively cool place free from sunlight and to spread it promptly and evenly upon the field to be planted, after which it should be immediately harrowed in so as to cover the bacteria deep enough and quick enough so that they cannot be killed by sunlight. If these precautions are taken, but little trouble will be experienced with the soil transfer method of inoculation.

There is one other method of inoculation that is coming into quite general use. This is inoculation by pure cultures, which are purchased from laboratories which make a business of growing and preparing these cultures for this use. These cultures cost from one to five dollars per acre, are put up by the laboratories, and delivered to the consumer in small bottles, each bottle containing millions of the proper kind of bacteria. The directions for using these cultures differ slightly, but should be strictly followed. They usually state that the contents of the bottle should be emptied into a gallon of water that has previously been boiled and cooled, to which is added a little sugar or beef broth, after which the mixture is placed for forty-eight hours in a moderately warm place to enable the bacteria to grow and multiply, about the same as a house-wife sets her yeast. After these bacteria have been devel-

oped a little more water is added, after which the alfalfa seed itself is thoroughly sprinkled with the solution containing the bacteria. The seeds are then allowed to dry in a moderately cool, dark place, after which they should be immediately planted. If the culture is good when secured and directions are followed out, a sufficient number of bacteria are usually attached to the alfalfa seed to thoroughly inoculate the whole field. After the small plants start to grow the bacteria are absorbed by the roots, and the process previously described is carried out, the bacteria not only furnishing sufficient nitrogen in an available form for the growth of the plant, but an excess supply for the crops which will follow, after the alfalfa is ploughed up.

The soil transfer method of inoculation where soil free from weeds can be secured is, however, probably the cheapest, surest and best method for the farmers of this section, and if directions are carefully carried out there will be but few failures. The principal precautions that are necessary are (1) to procure fresh soil from a field that you are sure is well inoculated, (2) to apply it immediately, and (3) harrow it in without delay.

When alfalfa is well inoculated it will be noticed that the plants are vigorous and of a dark green colour, while the plants not inoculated are liable to be spindling and of a light or yellowish green colour. The lack of inoculation, however, should be determined by a careful examination of the roots for nodules, as too much soil moisture also causes alfalfa to be light or yellowish green in colour. The inoculation frequently takes well only on a portion of the field. If these spots are well scattered over the field they will probably spread over the entire area during the second year. If they show up only on part of the field it would be well the second spring to put more inoculated soil on that portion about the time the plant starts to grow, and to disc it in lightly at once. Irrigation water spreads the inoculation much better than rainfall, as some of the bacteria seem to be carried in suspension in the water. Some have inoculated their fields by spreading a strip of inoculated dirt below the ditch and irrigating immediately the water carrying sufficient bacteria from this dirt to inoculate the field. This method is not recommended, however, except during the second year, and then only in cases where the inoculation hasn't become well established from the original inoculation.

#### TIME OF PLANTING.

A study of the rainfall records of this section shows that there is usually sufficient rain during May and June to start alfalfa, and these are the best months to start it, not only because of the rainfall, but as the plants are not particularly hardy until they attain a height of at least six inches, it is desirable to secure as much growth as possible before winter sets in. It is considered of considerable advantage to have rainfall enough to start the alfalfa, for the seeds are so small that if one were compelled to irrigate freshly harrowed soil to start the seeds, some of them would be bound to be washed away. This section is especially fortunate in this regard, for in most alfalfa growing districts it is necessary to irrigate the seed up.

## VARIETY OF SEED.

Though there are between 50 and 100 species of alfalfa, not over six of these are of much economic importance and these are all much alike. The chief difference between the American varieties is in hardiness or ability to resist cold winters, the two best strains for this locality probably being Grimm and Turkestan. Both of these strains have done very well here and should be recommended for planting, though almost any Northern grown Montana seed should give good results.

## RATE OF SEEDING.

Alfalfa seeds are quite small but usually have very good vitality. It has been found by actual count that if ten pounds of seed are scattered uniformly over an acre, fifty-two seeds would be placed upon each and every square foot. As it is indeed a poor farmer who cannot make at least half the seeds planted grow, it can be seen that planting at the rate of twenty pounds per acre is unnecessary, for this would put one hundred and four seeds upon every square foot or nearly one to each square inch. From carefully conducted experiments on a Government Experiment station in southern Idaho, where all conditions were ideal, including a very fine seed bed, it was found there was no difference in the yield during a three year period from alfalfa seeded at the rate of 4, 8, 12 16 and 20 pounds per acre. It is not possible nor practicable, however, for the farmer to manufacture such a good seed bed upon large areas, as was secured on this Government Experiment station, and it is therefore recommended that from 12 to 20 pounds and no more of good alfalfa seed be planted. Do not make the mistake of planting too deep. Alfalfa seed is small and cannot, like peas, wheat or potatoes come up through three or four inches of soil. During fairly moist weather one half inch in depth is sufficient, while in drier weather from one to one and a half inches would be somewhat better. Do not plant alfalfa deeper than one and one half inches. It does not matter much whether alfalfa be planted in drills or whether it be sown broadcast, so long as the proper distribution and depth of planting is secured. In planting it broadcast on top of well prepared ground, a fairly light harrowing after seeding usually places most of the seeds at about the right depth. Drilling the seed is probably preferable in this section, for if careful attention is given to the drill all of the seeds may be placed at the proper depth.

## NURSE CROP.

There is no question but that a better stand of hardier alfalfa will be secured if it is planted alone, without a nurse crop. Alfalfa prefers lots of sun, which cannot be secured when it is planted with oats, wheat or barley. There is no possible advantage in planting a nurse crop with alfalfa, except that a year's use of the ground is not lost. Taking the extra hardiness of the plant and the thicker stand that is secured without a nurse crop into consideration, however, it is hardly probable that it will pay in the long run to plant alfalfa with a nurse crop.

If alfalfa is intended as hay for either hogs or cattle or a pasture for hogs, it is preferable to plant it alone. It is, however, much improved as a horse hay, both in yield and feeding value if some other grass is planted with it. A grass to form the best mixture with alfalfa should do well in the shade, mature at about the same time as the alfalfa, and be comparatively rich in carbo-hydrates, instead of protein, in order to form a more nearly balanced ration. The very best grass that can be planted with alfalfa to accomplish this purpose is orchard grass. It is perfectly hardy in this climate, it does well in the shade, matures more nearly at the same time as the alfalfa than any other grass, is relished by stock, and has a good feeding value. Liverymen that have once fed this type of hay to their horses will pay from \$1 to \$2 per ton more for it than straight alfalfa. Where orchard grass will grow and do as well as it does here, never plant timothy as a mixture with alfalfa.

#### IRRIGATION OF ALFALFA.

The irrigation of alfalfa or any other plant is easy and simple, providing the land is sufficiently and properly prepared at the outset. Too much emphasis can hardly be placed upon the preparation of the land for the irrigation of alfalfa. Water cannot be made to run up hill, and it is absolutely imperative if good success is to be obtained with alfalfa that all knolls and hollows be so levelled down at the outset before the alfalfa is planted that the water can be made to run uninterruptedly from one head ditch to the next one below it. There is much more reason for careful levelling of the ground before planting alfalfa, pasture or other permanent crops, than there is with grain, for the same trouble will be experienced with every little hill and hollow every time the alfalfa is irrigated every year, while where grain is planted there is an additional opportunity of doing more levelling on the land each spring.



Levelling Land with a Fresno Scraper.



## WHEN TO IRRIGATE ALFALFA.

Careful experiments have been made during the past few years to determine at what stage of growth alfalfa needs irrigation, and it has been found that it needs a practically constant uniform supply of moisture throughout the season.

This condition can only be brought about where irrigation is possible, yet owing to the variation in the precipitation in this section, no hard and fast rule can be laid down, either as to the number of irrigations required or the stage of growth at which they should be applied. Much will depend upon the type of soil and the amount of rainfall received during the season. Every irrigator should learn to study the needs of his own particular soil and crops, and then apply his irrigation water at such times and in such amounts as will maintain the necessary constant uniform moisture supply in the soil. Alfalfa should never be allowed to become too dry, and above all, water should never be allowed to stand on it during irrigation for over twelve hours at a time. Neither should it go into winter quarters in a very wet, muddy condition, as winter killing may result. During normal years in this section alfalfa will probably require from two to three irrigations during the season.

## AMOUNT OF WATER REQUIRED.

Alfalfa is a gross feeder, and grows luxuriantly throughout the season, there being a very large amount of leaf surface exposed to the sun and wind, from which an unusual amount of transpiration takes place. Alfalfa therefore requires considerably more water than almost any other crop we can produce, all other conditions being uniform. A long series of careful, exhaustive experiments were conducted under my supervision by the United States Government for this purpose, and demonstrated that where all other conditions are similar, alfalfa requires twice as much irrigation water during a season as grain. Where grain does best with one acre foot per acre, alfalfa requires two acre feet, and where grain requires one and one half acre feet, alfalfa requires three feet, and has a tendency to produce the most crop where the most water is supplied, though care must be used not to over-saturate or waterlog the soil, for alfalfa will not stand "wet feet".

## TIME TO CUT.

Alfalfa is pre-eminently adapted as a hay crop, for no other forage recuperates so quickly after cutting. Parts of southern Arizona and the Imperial Valley, California, cut alfalfa as often as nine times a year. In order to secure the largest possible crop of the highest possible feeding value, however, alfalfa must be cut at the proper stage. This is at the time that the little basal shoots or the sprouts of the next crop start, which is usually when the crop is about one-tenth in bloom. If the crop is left until one-half or in full bloom these basal shoots will have grown so long that the mower will clip their tops, thus retarding the start of the second crop, while if it is cut at the proper time just

as these basal shoots start up around the crowns near the ground the next crop will come on and begin growth immediately, provided the necessary amount of moisture is available in the soil at the time.

#### GENERAL TREATMENT, FIRST AND SUCCEEDING YEARS.

There is insufficient time and space at my disposal to make a general discussion of alfalfa in all its phases. These other phases will be taken up by other papers. I wish, however, to dwell slightly on the general treatment of alfalfa. After planting alfalfa there is nothing to be done with it until it is from six to ten inches high, except to see that it has the proper supply of moisture. At from six to ten inches in height, no matter whether the field is weedy or not, it should be clipped in order to strengthen the crowns and thicken up the growth. If the season has been favourable enough and the initial planting early enough there may yet be time to secure one crop during that season, though in the majority of cases even in much milder climates no crop at all is expected the first year. Mr. H. Lausen of Carseland during the past season has secured about as large a yield from alfalfa for the first season as I have ever seen, even in the mild climates of Colorado, Utah or Idaho. Mr. Lausen planted two acres during the latter part of May, 1915, and in August harvested one and one-third tons of cured hay per acre from the plot. This I consider to be phenomenal. If the initial planting of alfalfa has been done so late in the season that clipping when it has reached from six to ten inches in height will force it to go into winter quarters with less than four inches of growth, I would not clip it the first year at all, for alfalfa, in order to be able to withstand the winter in the best possible shape, should have some amount of growth at the time the ground freezes up. This holds particularly true for the first season. In the subsequent years alfalfa requires no unusual treatment, except that care must be used that it has a proper supply of moisture, that water does not stand upon it, and that the crops are cut and cured properly. Discing and loosening up of the surface each spring, after about the third year has been found to be beneficial in many localities, particularly if weeds or grass have a tendency to creep in. Under these conditions discing every spring will be advised here.

#### HARDINESS AND VITALITY OF ALFALFA.

There is no doubt in regard to the hardiness and long life of the alfalfa plant in this section. If planted on the proper class of well-drained soil it will positively do as well here as in any similar climate on earth. It has been my pleasure during the past season to find alfalfa stems seven feet nine inches in length, and to dig five roots of alfalfa that totalled seven feet across the crowns when hung up side by side. Neither southern California nor Asia herself, the original home of alfalfa, can beat this, so have no fear in regard to the strength and hardiness of alfalfa as grown in this part of Alberta.



Illustrating the Hardiness and Vitality of Alfalfa.

CONCLUSION: Before closing I wish to again emphasize the following facts:

1. That alfalfa growing is no experiment in this part of Alberta.
2. That alfalfa has a greater food value and produces more of it at less cost than any other forage that can be raised in this section.
3. That there is no other crop that will improve one's soil so much as the growing of alfalfa. It has been known to double and even treble the yield of cereals after having been grown for but three years.
4. That the lighter soils are best adapted to alfalfa and that only well-drained soils should be selected for this crop.
5. That ground planted to alfalfa should be carefully prepared for irrigation—that money spent on levelling pays larger returns on the investment than the expenditure of any other like amount.
6. That alfalfa seeds are so small that the manufacture of a finely pulverized seed bed is absolutely imperative if good results are to be secured.
7. That alfalfa ground must be inoculated in this section; that soil transfer is probably the preferable method; and that great pains must be used in securing fresh soil, in spreading it evenly, and in harrowing it in immediately if good results are to be secured.
8. That from 12 to 15 pounds of seed per acre planted not over 1½ inches in depth is proper.
9. That planting without a nurse crop will give better success nine times out of ten and be more profitable than planting with a nurse crop.
10. That alfalfa requires more water than grain, and that the soil should have a uniform moisture content from early spring until late fall.

11. That alfalfa should be clipped the first year about the time it reaches 6 to 10 inches in height.

12. That the crops should be cut whenever the basal shoots or the beginning of the next crop's growth starts, which is when approximately one-tenth of the crop is in bloom.

13. That alfalfa should be disced every spring after the second year, particularly if weeds and grass have begun to grow with the crop. This not only kills the weeds and grass, but actually causes the alfalfa to become thicker on the ground.

14. That alfalfa has a broader use, and is more profitable and more certain than any other crop that can be raised in this district, and that when alfalfa is once planted on a farm and given a fair trial not only as a horse feed, a cattle feed and a pig pasture, but as a soil rejuvenator, that this farmer will never again be willing to farm without an alfalfa field on any irrigation project in Sunny Southern Alberta.

(Applause).

CHAIRMAN: Mr. Hinkle, who was to have come, I regret now to say, is unable to be with us.

I believe arrangements are being made by the good citizens of this town to give a banquet to the delegates to-morrow night, and they want a show of hands to find out how many of the duly accredited delegates will be here to-morrow night, so as to make arrangements accordingly. Now, if those who are delegates in the room and can accept the kind hospitality of the town, I will count them and report.

(Approximately fifty delegates showed their intention of accepting the invitation).

We will now hear from Mr. G. R. Marnoch, President, Lethbridge Board of Trade.

MR. MARNOCH: So that I may not appear before you clothed in false pretences, let me warn you at once that I must disclaim the honour of being as I am described in some of the press notices of this Convention, "a prominent agriculturist". I am only a plain business man, but as such, the established and projected irrigation projects in the Lethbridge district have always been appealingly interesting to me.

The oldest irrigation project of any size in the prairie provinces comes right close up to the gates of the city of Lethbridge; and, for some years, the citizens of Lethbridge drank the water that was brought into the city by irrigation canals.

We have become so used to seeing successful farming carried on under irrigation, and the people of this province have become so accustomed to the fact that irrigation is successfully carried on in the districts around Lethbridge, that they have almost forgotten the existence of our irrigated farms, and the significance attaching to the fact that these operations are carried on.



The farmers surrounding us, however, have been very observant of these successes, and those who have no irrigation are exceedingly jealous of those who have the water.

The Irrigation Branch of the Department of the Interior has for some years past been carrying through preliminary surveys of the available waters, and of the lands to which these may sooner or later be carried. Farmers to the north of Lethbridge were told some little time ago that it was possible to divert water to 100,000 acres of their lands at the reasonable capital cost of somewhat less than \$20.00, and they have displayed so keen an anxiety to get the water at the earliest possible moment that on the one hand the Dominion Government has been rapidly carrying out detailed surveys to show just how many acres of each quarter-section could be watered, and on the other hand the Provincial Government has provided the necessary legislation to enable these farmers to form themselves into an Irrigation District, and so to become established in a cohesive body that they may be able to issue bonds upon the security of their lands, and thus put themselves in shape to attend to the necessary financing.

Information has recently been made public by the Irrigation Branch to the effect that another project, covering approximately 350,000 acres of land east and south of Lethbridge, could also obtain irrigation water at reasonable cost, and as time goes on and as future details of the exact description of these areas are made available, we shall no doubt find the farmers who are so fortunate as to find themselves within these areas, also clamouring for water.

These projects to which I have referred have of course to travel some way before they reach completion. But there is another upon which action is now actually proceeding; that is an extension of the established district near Lethbridge, whereby some 15,000 acres lying east of Lethbridge towards the town of Taber will actually have irrigation water flowing over them sometime during 1916.

I have proceeded in a somewhat inverted order, and now come to our established irrigation areas. The water was first brought to these lands some twelve or fourteen years ago, and there are now some 75,000 acres occupied and farmed while there are still unoccupied and available for sale some 35,000 acres.

Although considerable progress has been made in the development of the 75,000 occupied acres, we are still a very long way off the point of having reached the highest productivity. There are some highly developed farms, and there are some that have not made great progress. There has been a tendency for farmers to acquire areas too large for the amount of capital that they had in hand for development—a common complaint in this Western Canada—but that is a condition that will be gradually rectified as time goes on.

There are some 13,000 acres under alfalfa, and the acreage under this crop is extending every year; the demand for our alfalfa hay for the mining and lumbering camps in British Columbia is constant, and some of our alfalfa and timothy has found a market as far east as Winnipeg. This summer has been one to cause the dry farmer to smile, and even to grin broadly at times;

and it has brought some worries to our irrigation farmer. The summer rains fell inopportunately for the harvesting of the alfalfa crops, with the result that there is not so much available for shipping out as there usually is, and considerable quantities of this crop will perforce have to be fed on the farms. The alfalfa retains its feeding value, but its colour and condition for shipping have been damaged. This, however, may ultimately prove to be a blessing in disguise; for it is undoubtedly discovering to the farmer and to his banker that the greatest advantages from irrigation operations lie in the development of the livestock industry.

Mr. Fairfield, and Mr. Dunham, our lawyer-farmer, will deal with this; so I will only anticipate that they will say by a little leaf of personal experience. I am going to refer for a moment to the value of fertilizers: I lived in Ceylon for a good many years, and I will tell you of what happened there with regard to a single crop without fertilization. The coffee industry attained large proportions in Ceylon; many planters made fortunes, and many retired and lived in the Old Country enjoying steady incomes of \$10,000 a year off comparatively small acreages. In one single year the whole crop was blotted out by fungus and blight. The bushes had enough vitality to produce crop from year to year—but they had no reserve power, and the depleted soil could not supply it to enable them to resist disease.

Our planters, however, were not hopelessly discouraged; they set about planting the abandoned fields with tea bushes; but they were forewarned and forearmed by their sad experience in coffee, and so, whenever the tea bushes showed signs of lack of vigour they got scientists to tell them what the tea bush ate up, and they proceeded to supply what was lacking in the plant's daily food. The present position is that for every pound of dry tea shipped off a tea garden, one pound of highly expensive compound fertilizer is shipped in and dug into the soil around the bushes.

Here then is another illustration of that oft-told tale, that the soil cannot be robbed without disastrous results. And the moral for irrigationists is—and they have the means of doing it all right—to feed their crop to livestock, and apply the manure to the soil.

A farmer within the area of the proposed Lethbridge Northern project carefully summer-fallowed 26 acres in 1914; in the spring of 1915 it looked like his top mulch might blow away; he had a fair quantity of stable and cow manure, so he at once set to and spread that over his field. I am almost afraid to mention the result—you may hardly believe it even in this year of phenomenal yields—but here it is. His crop—and mind you both land and crop were carefully measured—amounted to 74 bushels of wheat to the acre. He is dead anxious to get irrigation, and when he gets it he will show you crops of alfalfa that will make even a ripe field of wheat look green again with envy.

I want to direct your attention now for a few minutes to these maps:

This map of the territory around Lethbridge shows the present status of the irrigation projects in different colours. Here to the south of Lethbridge are the old established Alberta Railway & Irrigation Company's lands. These parts

appropriately coloured in green show the producing areas. Here in yellow are the lands supplied with ditches and running water, but still waiting for farmers to cultivate them.

Up here to the north is the proposed Lethbridge Northern project, showing in red the outlines of the areas to which water can be diverted from the Old Man River west of Macleod. The total capital cost of this project will be nearly \$2,000,000. As I have said, the farmers in these districts are very keen on getting the water.

On these other areas coloured in pink, to the northeast of Lethbridge, is situated the Southern Alberta Land Company's project.

Now please observe all these little squares with names marked across them: These indicate school districts, and school districts indicate population. Note the schools on the green producing areas. Note also the names on the red areas of the Lethbridge Northern project; the people there want the water. Note again the entire absence of schools in the pink area; this has still to be colonized.

In fact, as I often say, on the green land there are men, land and water. On the yellow area there are land and water, but no men. On the red area, land and men, but no water. On the pink area, land and ditches where there will soon be water—but no men.

Down here to the south and east of Lethbridge is the area enclosing the 350,000 acres which may be watered later on.

Now, gentlemen,—what does all this mean to Western Canada? For the answer to that question, please look at this other map, which shows the southern parts of Alberta, Saskatchewan and Manitoba. On this map, Mr. E. F. Drake, the Dominion Superintendent of Irrigation, has shown all the areas to which I have referred, and, in addition, he has shown the C. P. R. Eastern and Western projects: These contain lands to the extent of roughly 800,000 acres capable of irrigation.

Let us look now at the total areas comprised:

1. The old established Lethbridge project with recent addition .....	125,000 acres
2. The Southern Alberta Land Co.'s lands .....	250,000 acres
3. The Lethbridge Northern project .....	100,000 acres
4. The C. P. R., Eastern & Western Sections .....	800,000 acres
5. The areas east of Lethbridge.....	350,000 acres
<hr/>	
Totalling say .....	1,625,000 acres

Of all this, what is being farmed at present is a mere flea-bite in proportion.

Look now across the map and consider how much of this southern territory of Alberta and Saskatchewan had actually to be supplied with seed grain for the 1915 crop, owing to the drought of 1914.

Have also in mind that all our Western farmers are turning their attention to livestock raising.

Have in mind also the hay crop—conditions in Saskatchewan and Manitoba this spring and summer. From Mr. Angus Mackay, whose authority will not be questioned, we had the information this year that the rains came too late for hay in these regions this spring, and that the position in regard to hay was somewhat insecure; and I may say that we have shipped quantities of hay and alfalfa as far east as Winnipeg this year.

With these points in mind, then, what does the development of these tracts under irrigation mean to Western Canada as a whole?

It means an assurance that under such circumstances as these, adjustments would take place so that the farmers' livestock would be taken care of in the matter of green feeds. This would come about by our shipping out hay, or by the dry farmers shipping in their livestock to feed here.

As I have mentioned, Mr. Dunham will deal further with these matters, and, as I have already taken up a good deal of your time, I will leave it in his hands to further extend the theme. (Applause).

MR. DOMAILE: I shall have to take issue with the last speaker in regard to the quantity of seed grain shipped into Saskatchewan last year. In a new province we have a large number of unskilled farmers, but they become skilled farmers. In all that dry area of Saskatchewan all the old farmers were getting good crops of grain. I know lots of places where men who have been there many years, even with the drought of last year, had 28 bushels of wheat and good wheat too. I may say this because some people here might be prejudiced against Saskatchewan on account of all the grain shipped in to us and the quality is a sore point with us, as well. All that part of Saskatchewan, that is the southern part, if farmed carefully, is capable of producing excellent crops, and I have been all over that country. There was a great cry that the settlers should be taken away and that they should never have gone into that district, but we found all over the country old farmers who had been farming for a number of years, and farming carefully, and they had very, very good crops indeed.

CHAIRMAN: The suggestion was made this morning that at the time of the closing of all addresses, we should take some time for discussion. If any person has anything to say in connection with any of these addresses, we should like to hear them.

MR. DENNIS: We have all listened with a great deal of pleasure to the able and full address relative to the necessity of alfalfa in our irrigated areas, and the results obtained therefrom. I am fairly in accord with and particularly anxious that everything possible should be done for the introduction of alfalfa, and we have endeavoured to assist the farmers in this, and have brought in alfalfa seed here. One point, however, is entirely overlooked. They have given us the beneficial results from feeding of alfalfa to live stock. Mr. Fair-



field made that clear, and Mr. Bark has dwelt very fully upon what is necessary to obtain results, but they have all overlooked the value of alfalfa as food for human beings. There is a place in Minneapolis where alfalfa products are now sold in shape for human beings, and I give this information in order that the discussion may be complete. At this store, as Mr. Cameron and some of our officials know, you can buy alfalfa bread and alfalfa cake and alfalfa tea and alfalfa coffee, and even alfalfa hair tonic, and alfalfa candy, and alfalfa laxative, and alfalfa products of all kinds, and numerous other things. I just want to add that to the discussion to show that while it is very good for sheep and cattle it is also good for human beings. I have tried the candy. It was very good, and the tea served was very good. In fact the ladies and gentlemen who did not know what it was expressed their opinion that it was very good tea. I have not tried the hair tonic yet. (Laughter) (Applause).

MR. SPEAKER: The general thing insisted upon all through these meetings has been increasing production, and the chief weight in regard to increasing production is laid on increasing live stock, and importance may be regarded as centred in that direction because I believe the foundation for farming in this country and all countries is in live stock, but the question on my mind of many farm leaders in the Western Province, which has been very urgent for some years and is growing continually, and which we shall be up against in a short time, is, what are we going to do with the live stock when we have raised it. I think that is more urgent than most farmers have realized.

In regard to the hog production we would have been absolutely up against it in the fall two years ago, if just at the critical time when we really saw no outlet for hogs and the price looked like going down to four cents, the American market had not been opened to us freely, and we got rid of our surplus there. Last year, or just about the time the war commenced, we were in the same position as to having an overplus in the way of live stock, for which we saw no clear market and we were up against it again to run a very great depreciation in prices. The war conditions came in and a great many hogs were destroyed and not sold at all.

Now, in regard to the cattle business, that is growing in urgency every week. The Assistant Commissioner of Live Stock for the Dominion in my office told me that, in Ontario if it had not been for some special French war contracts there would have been a complete slump in cattle there, as there was not an outlet for what they were producing. He told me in Alberta we were not far from it. He said he had thorough information but I was rather sceptical. I think that as farmers and also business men, the most difficult problem we have before us is, I am convinced, the organizing of our live stock in all directions. We have given our attention the last ten years chiefly to organizing the grain business, and have fairly succeeded in that, so that it is in fairly good shape for marketing, but we have done nothing at all for organizing a live stock business and that applies in all its direct and indirect applications.

For me it is the most marvellous fact and one absolutely discreditable to our business sense in Canada that in Great Britain, I think, for the eight months of this year, there were imported into Great Britain, in exact figures, about \$87,000,000 worth of butter, and of that I do not think Canada had more than between \$1,000 and \$2,000. Now, there is not a country on the face of the world that is better situated, and very few so well situated, for the dairy business, and for the sale and export of butter, than Canada is. Yet we are actually nowhere in the great market yonder; but not only that, we are beaten in our own market by the importing of butter from New Zealand, so that in every direction of the live stock business, we are at the bottom end. It lies so much on my mind, and it will be so absolutely urgent in a very short time, that I want to appeal to all men here; to the men in the office; to the official man, and the man who controls the great railway corporations. We need the co-operation of the brain and help of these men to solve a problem which so far as the farmer is concerned, is the most difficult problem of all. I hope you will pardon me for introducing these remarks, but it is so absolutely necessary for us to face them that I did not want to leave without saying something on this subject.

MR. PETERSON: I have listened with great interest to the addresses of Mr. Fairfield, an old friend of mine, and Mr. Bark and Mr. Porter. As Mr. Speakman has pointed out, these gentlemen have dealt with the subject of production and have dealt with it in an optimistic way. The only note of pessimism introduced into the meeting came from Mr. Dunham and Mr. Speakman's addresses as to the market for our products. As to alfalfa, it seems a fairly simple matter, and Mr. Fairfield has shown us this morning with what outstanding success he has succeeded in feeding sheep and cattle. In the Irrigation Block here, my associates and myself organized a company and put in a very large bunch of sheep, and I hope the day is not far distant when sufficient alfalfa will be raised in our district to feed our stock during the winter.

To say that our markets are badly organized is, I think, only too true. Take the by-products of the live stock industry, for instance turkeys. I think in Victoria they were selling at 35 cents per pound cold storage. In Calgary I bought them at the public market home raised for 18 cents. There is a spread of over 100 per cent between the retail prices in Victoria and Calgary. It seems to me there is something radically wrong in handling farm produce in this country, when there is such a difference. Take mutton; how is it that you cannot buy a decent piece of mutton in this whole country from the Coast to Winnipeg. You go into the butcher shop and ask for mutton and you get cold storage mutton from New South Wales. Outside of a hind quarter of lamb, I have not been able to buy a decent piece of mutton in this country. It is perfectly dishonest that out at the Pacific Coast in Victoria, they will advertise Island mutton, and you will get a piece of mutton that grows anywhere outside of New Zealand. When you go in to buy cold storage mutton you know what you are buying. We have a law in Canada, I think, that deals with the

prevention of fraud in food stuffs. That is, you cannot fill a can labelled "Tomatoes" with sawdust, and say it is tomatoes. The law says you must fill it with tomatoes. Why cannot we insist by law if necessary that the butcher shall state whether it is cold storage mutton or home grown or New Zealand? Some years ago when they first placed New Zealand mutton upon the London market they insisted upon it being labelled "New Zealand mutton". When I was in London last a man told me that he invariably bought New Zealand mutton in preference to the home product, and I am referring to Canterbury mutton, which is produced on what is perhaps the best sheep growing plains in the world.

When we first started our company we had a thousand odd sheep for sale. There was no market and fancy this, in a country where you could not get decent mutton, the Swift Company and the Burns Company could not buy it because they were loaded up with New Zealand mutton. I think it is just as legitimate to insist upon the retailer informing his customer whether he is buying fresh mutton or frozen mutton as it is to insist the other food stuffs being properly branded as the law requires at the present time. I am merely suggesting that in the rudiments of market organization there is one thing we can insist upon being done. I have no objection to frozen mutton being sold in this country. The whole of the western population has been educated to eat frozen mutton. A great many of them who have lived in this country for a great many years do not know the difference, but I think one difficulty in the market as far as mutton is concerned is the selling of it without stating where it comes from, and by selling these things under different and distinctive names the public would soon notice the difference.

MR. LAWRENCE: It is over fifty years ago that I attended the first agricultural meeting, and I have been to some scores since, and invariably this market question crops up in one way or another. As the last speaker says, he had a thousand sheep to sell and he found that the cold storage people had already provided for the season. The consequence is that he could not make any market for his mutton. Now, would it not be common sense in a case like that to tell Pat Burns or Swifts, or whoever it is, that we are going in for sheep and in twelve months' time we shall have one thousand to put on the market, and if you cannot take them in we will market them ourselves. The Burns Co. would be only too pleased to say, we are glad to have your advice and when you are ready we are ready to take them. The producer has to be in advance of the time when he wants to market his stuff. It is the same with everything. In the Kamloops district only recently, we were eating New Zealand mutton, and we were glad to get it, thankful to get it, because we should have had no mutton, but to-day one of my neighbours who went into sheep raising has changed all that. He took in a large number of sheep and tried to sell them to the butchers. The butchers did not want them—of course not. He came into the street market (and he was a gentleman born and bred, a gentleman by habit and environment) and he put on a white smock, took a steel and a

butcher knife and came into the butcher market and he was selling his lambs splendidly. That lasted one season. The next season there was an advertisement in the paper that "So-and-So" was coming into the market at a certain time and was going to give Kamloops a certain trade with spring lamb. From that day to this he has never been there. Pat Burns' buyer went in there and bought all he had. That man did not growl the year before but went and sold his lambs and the next year the buyer went to him bought it on the place, and the disappointment was not in the price paid him; the disappointment was that the public did not get it first hand. In a case like that the public have to look after themselves. Well, now the sheep industry is increasing, and I have approached Mr. Burns himself and shown him how part of his lease of 20,000 acres could be much better utilized, or one part of it anyhow, if he would put 1,000 head of sheep on it and supply the market of Kamloops with the home grown stuff. It is better for him to do this than to send his men over the line and bring the sheep in. They have to bring them right into the Okanagan Valley and take them to a depot in Vernon and other places and put them in cold storage, and of course they already have provision for cold storage and must fill up in one way or another. Can you tell me that a man with 100 or 50 carcasses to sell—and Pat Burns blocks him when he is living in Vernon or Kamloops—cannot sell them to the public who are ready to buy them. No, sir, it is in the hands of the producers themselves. If there is any business in them it is for them to organize and market their stuff. If they have not the ability themselves they must hire a man to sell it for them and sell it under their eyes with a daily or weekly accounting, and pay over the money realized on a fair selling arrangement. There is, I believe, the whole solution of the marketing difficulty.

Mr. Speakman spoke about the butter question of New Zealand. New Zealand has got the market for butter in the Old Country, but Denmark runs it pretty close. But also in such a dairying country as British Columbia and Alberta, it is a positive fact that one of the finest dairying countries in Western Canada is the Kamloops district. The New Zealand butter fetched 40 cents a pound, and is retailing at 45 cents, I think, now, and the stores in town, for instance the Hudson's Bay Co., we could not sell our butter to them. They say to the local producer, we cannot give you more than 25 cents per pound, but they are selling New Zealand butter at 40 cents. They say, Yes, but the public prefer it. Why? Because it is better butter most decidedly. Now I said to Mr. Moore, the Superintendent of the Agassiz Farm, "How long is this New Zealand butter in storage when it gets into Vancouver? There is a direct line of steamers. It takes a month to come across or three weeks from the time it is made until it gets on to our tables. "Is it three months," I said, and he said "Three months! why it is two years." It is a fact and he assured me of it, and he is an authority on such matters.

Do you mean to tell me that we cannot make good butter that will go fresh on our tables, and compete with butter made two years ago? Is it reasonable, is it sensible? There is this about it, that New Zealand has contracted



with the Old Country for thousands of pounds of butter and they have sent all they could and yet cannot fulfil those contracts. They have taken back all their butter out of storage from Vancouver and taken it back to send to the Old Country. There is another thing and the province of Alberta has benefited by it. The agents from New Zealand have gone to Edmonton and bought all the butter they could lay their hands on, and have sent it back to New Zealand or the Old Country. So if we as farmers living on the land and looking for the land to support us, to get our living out of the land, if we cannot face the competition along such lines, then I am inclined to believe what Mr. Dennis said at the Irrigation Congress last year, that we have not got the right men on the land, and we will have to keep on getting the right men on the land before we can do it.

I may say, in a small way in Kamloops, we have faced that competition and a friend of mine with whom I am associated has put up a barn for cows, where cows have hardly been kept before. He got a good man, as he thought, to make his butter. Some was taken to Pat Burns and he said, "do you call that good butter"? and it was taken back home and used for cart grease, or something of that kind. Another lot was taken to the Hudson's Bay store and they said they did not want such butter. The owner went into the whole thing to see what was the matter. He studied the matter and in less than a month he was turning out butter and after going to the Hudson's Bay store with some of it they said, "We will take all the butter of that kind that you can produce, for it is a perfect butter, and we will give you 35 cents a pound for it." I do not believe it is the market, or the labelling of the foreign meat or the labelling of the butter, but it is the men and the women on the farm, the right people who are determined that if they are turned down in one way they will make good in another.

CHAIRMAN: Just let me make one word of explanation about the butter business. I am not worried about it. We have been able to sell our Alberta butter for four cents a pound more than New Zealand butter was selling for here. The special grade of Alberta butter brought four cents a pound more than was paid to any other creamery turning out butter in Canada. We are now turning out the best butter. We took the prizes at the Toronto Exhibition, and got a premium of four cents a pound over three or four other provinces of Canada that are operating creameries. Some of them operate on similar principles to us. Now, we cannot get enough to supply the demand. Because of the quality, a poor grade demands a poor price, and there is a limited demand for it, but good articles mean a good price, and there is no limited demand here. Consequently, we are marketing to-day all the butter the government creameries are making, and also the private individuals we market for, which we do on conditions that they grade the cream out of which the butter is made, and we put a man in the creamery to set the grade for the cream.

Somebody said something about profits in connection with the farm. Just as soon as you establish a grade for cream in the creamery, and if it is not up

to a certain grade, understand that it will be sent back, the farmer will send in what is the proper grade. Take Ferintosh on the Grand Trunk; a shipment of butter from there to be marketed for them turned out, twenty were firsts, sixty were seconds, and the balance was off grade. Then we sent them word that we would only market butter on condition that they would grade the cream and allow our man to go into the creamery and establish a system. We did that. A month after grading was established, they sent in sixty per cent specials, and the balance was first and no seconds and no off grades at all. That is in just one little creamery in Ferintosh on the Grand Trunk.

The result of having grading of cream established in the creamery is that to-day we have no difficulty in disposing of our butter in the province of Alberta. Creameries have been increasing in number and creameries are opening up in many places. In our cities the milk companies would pay any price for milk and cream, and when a farmer was getting \$2.40 for milk he would be foolish to make butter. If a man is making money out of real estate he is foolish to go into something else. Anyway, that is what the farmer did. Now, these fellows are not paying fancy prices for milk any more. Most of us in Edmonton are drinking water, with the result that dairying is getting back to its old basis, namely, making butter and cheese, with the result that our creameries are being re-established. I think that in the next three or four years, the creamery business of Alberta will be entirely different. Not only will the old creameries be opened, but a lot more will be running and the business of milking cows will be on a better footing than it has been for years.

We are not afraid of the New Zealand butter. We can beat them making butter, and we can put a better grade on the market and have a better way of marketing it. Why this year we marketed Alberta butter at a premium in the city of Montreal. That does not mean that they cannot make good butter down there, but they cannot make it as good as we can and we shipped the butter down there and sold it for more than any other creamery butter brought in the city of Montreal, and the same will apply largely to all farming operations.

It is just the same with the farmer raising stock, if he has not a good bunch of cattle he has to go chasing around looking for a market, as a farmer I know did. Last year he put in a good quality of cattle. This summer I saw two cattle buyers chasing around after him, and they wanted to pay him half a cent a pound more than anybody else was paid in the whole district. That is the way to make money. If you have a good bunch of steers you can sit at home and have these fellows just chasing around for you. If you have the quality there is no question about selling them. We have gone a good deal into marketing butter, still the whole thing resolves itself back to the question of producing the best quality of any article, and you will find no difficulty in people buying it.

MR. DENNIS: I have listened with pleasure to what you said, and I agree

with it. At the same time, Mr. Speakman has laid his finger on the difficulty we have in this country. We can no doubt produce good butter and steers, but is it not a fact that in this country where we can produce what you say is the best butter and the best beef that is grown anywhere and mutton too, I believe, the larger portion of the mutton, beef, butter that we eat in the country is imported. We know we can produce them, and yet our people are complaining that they cannot get a market for what they produce. Yet at the same time the larger percentage of mutton, butter, beef and eggs that we consume are imported. These are not theories. These are facts. You know it and I know it. Why should we be bringing in chilled beef from Chicago or the East? Last year we did not bring poultry. Last year Alberta produced sufficient to supply the province and also sufficient to ship some out. But we are to-day importing from all the other provinces and other countries. The only thing we have a surplus to ship out is wheat. We ship in mutton of all kinds and have been shipping in butter and have been shipping in eggs. Why, if that is the fact, should there be the slightest complaint on the part of any man in this country who is producing beef, butter, poultry, mutton and eggs, that he cannot get a market. There is trouble somewhere and without a doubt something will be done to correct that condition so that we won't have a market for anything from the outside until our market has been reached for the products at home. A great deal will have to be done by the producers getting closer to the consumer. We have complaints throughout the country that in this district they produce beef and cannot get a market, and in other districts it is something else and they cannot get a market. We have to get rid of this anomaly and get this country what it is intended to be, that those in it should not be paying toll to New Zealand or any other place for what we eat.

At the present time we have a lot of beef in this country that we are not able to get a market for. I do not think we are importing much beef. I think the beef concerns are able to supply our local demands. They complain they cannot get a market, that if they have a large margin over our beef has been shipping out on the hoof this year to Chicago. This was brought about by a large demand on the other side and as Mr. Speakman said this year in Ontario, they would have had difficulty if they had not filled French war contracts—that was filled by beef on the hoof from Montreal, but after that the contracts existing in the warring nations for live beef or canned beef or chilled beef stopped altogether. The British Government were asked to help out the situation by taking a lot of beef out of the West and they said we cannot; it is covered by contracts with the Argentine. At the present time the Russian and French Governments say, we do not want carcass beef; what we want is canned beef and the last week in September in New York there was a contract let to the Swift Company for eight million one pound tins to the French Government. We have not the facilities to fill that. If we had, Mr. Burns would not have eight thousand carcasses in his cold storage to-day.

Everything produced in this country should be used in this country before we start importing. I do not doubt that the butter you are producing in the government creamery is as fine butter as in the world, and the beef is

the same and the mutton is the same. We know what we can do with the produce of the soil, grain, etc., but we are not at the present time so situated that we are getting the marketing facilities for them and the producers are complaining, but at the same time we bring them in from the outside. In Manitoba, Saskatchewan, Alberta, and British Columbia, we are importing very large quantities of butter, mutton, eggs and poultry. They bring cream from Saint Paul and Minneapolis to Winnipeg and butter from the South into the Winnipeg market. We have brought even beef and ham from the Chicago packing houses and from the Eastern packing houses into Calgary and we are doing it. Last year about this time, we packed six refrigerator forty ton cars on the wharf at Vancouver from a ship from China and they were loaded with eggs from China for Toronto and Montreal, and we are complaining that we cannot get a market for our eggs. I think we should follow Mr. Speakman's lead and everybody should put his shoulder to the wheel and let us all try to solve this problem.

DELEGATE: Mr. Dennis was asking for a solution. The problem was settled by New Zealand some years ago. Why not follow them exactly in connection with beef, dairying and other things as well? New Zealand, as I know for a fact, is shipping every bit of beef and every bit of mutton that they can lay their hands on at much higher prices than we can get and the same with butter. Why not do the same as they do? There is the problem in a nutshell. Before I sit down I would like to ask, Mr. Chairman, on what system the dairies are run in connection with these creameries you mentioned a few moments ago. Are they run under government or private systems?

CHAIRMAN: If any company of farmers want to organize a creamery, if they will organize a company with \$2500 stock subscribed (and it takes that to build a creamery equipped to handle the product of anywhere from five hundred to a thousand cows) the Government will loan the company a certain amount at five per cent interest to be paid back in ten years, in order to get the creamery started.

After the creamery is started, we have the Dairy Commissioner and three or four assistants to aid it. We have cold storage space leased in Calgary and Edmonton to handle butter, and we send a man to the creamery to establish a system of grading in the creamery and he stays there until they are well under way in the making of butter. Then we take the butter product shipped to us at Calgary or Edmonton and it is all graded there by a government grader and we market it for them and charge them with the actual cost of cold storage and handling. We give the services of the Dairy Commissioner and assistants free of charge. These services are paid for by the Government as we regard that as educational work to turn out first class butter product.

Then we offer to any private owned creamery in order to raise the standard of butter in Alberta, that we will market their butter for them if they will allow us to grade it. There were several very large creamery companies in Alberta that we made this offer to and they laughed at us when starting and



said they could do it as well as we could, but it took them just a year to find out that we could get a premium for our butter and they could not, and to-day we are practically marketing all the butter for the private as well as the government creameries.

We do not subsidize creameries in any way. We take the butter from the private creameries and ship it to the Calgary or Edmonton cold storage and we make them an advance of fifty per cent of the value when shipped in and the butter is graded and marketed for them. During the past year we handled eggs and this year we are making arrangements for poultry because the poultry companies in this province will steal 75 per cent of your poultry from you. I know that because they stole some ducks of mine.

DELEGATE: It just lies with the farmers or the Government starting this instead of the Swift Company or P. Burns having packing houses. I remember in New Zealand they were in the same way as you are to-day with stock. You could go from one end of the country to the other and find farmers' co-operative packing plants or freezing plants as we call them, and without that we could not get a decent price to-day. As soon as we get into the pig line and put them on the market, down goes the price, just the same as beef to-day. As soon as we produce it, it goes down. In the country they have orders for more than they can supply. It just lies with the farmers to go in for co-operation. That is the secret of the whole thing, both in the dairy and in the cattle line. I think if we want to follow the lead of New Zealand, and I saw it started in its infancy, we should have co-operation. Lots of people thought when they went into co-operation, that all the smaller settlers would go to the wall, but they are doing a better business to-day than they did before they got cash for their trade. That is what makes the New Zealand business what it is to-day. They fell down when they first started their co-operation, but if you keep in the same lines as they are to-day, you will make the success of it that they have done.

CHAIRMAN: The party is expected to meet here at 2.30 this afternoon to make a trip to see the Bassano dam. Those who have not seen this great structure will see one of the finest sights, I think, that we have in the province of Alberta. It will be worth your while to make this trip.

To-night on the programme will be an address from Mr. Hutton on grading up a dairy herd. Mr. Hutton has actually done this on the farm there and will speak from actual experience.

Mr. Hays, Chief Engineer of the Southern Alberta Land Company, will speak to-night on "Cost Accounting for Farmers".

With respect to farm book-keeping, this has been one of the serious features of agriculture and I have been wondering for years about getting a system that would be simple enough so that a man can understand it and be of some use to him.

I remember as a boy I attended a meeting of a Farmers' Institute in the county of Huron where a man lectured on book-keeping and they selected a

Scotchman to take the system home and use it for a year, and the man that lectured said he would come back the next year to see the result. Well, the Scotchman came back at the time appointed and swore that the lecturer owed him \$800—that he had lost \$800 by this system of book-keeping.

I might say that we have discovered a man in the province of Alberta, from British Columbia, by the way, some good things do come out of British Columbia. He has put in a cost system in connection with our demonstration farms which is the first cost system I have ever seen that is worth anything. We are able to find out exactly what our milk costs per gallon to produce and butter per pound. He is a wizard in book-keeping, because he is the only man on earth who understands real book-keeping. We have had him working for the last two months on a simple system of book-keeping that can be put on the farms and that a boy can keep, and he says he is rather surprised himself with it and he certainly has surprised us. He says he got all the knowledge and information from the Department of Agriculture from our men and that it was through talking to the men who did the farming. I believe we are going to be able to give to the people of the province of Alberta a real simple system of book-keeping that will enable a man to find out whether he has gone broke at the end of the year or not, without asking his banker.

I had no intention of saying anything about this only I saw this address that was to be given to-night. If any of you desire to get a set of these books from the province if you will send your names in to the Department of Agriculture at Edmonton, arrangements will be made to send same to you.

We will now adjourn to eight o'clock this evening.

### *EVENING SESSION—NOVEMBER 24TH, 1915.*

Mr. William Pearce, Chairman.

CHAIRMAN: This evening's session will be opened by a paper by Mr. Hutton, of Lacombe. (Applause)

MR. HUTTON: Mr. Chairman, Ladies and Gentlemen,—I have to-day had the pleasure of visiting the source of water for quite a large area of this part of the country and was very much impressed with the size of the work there, and I am sure it will mean a great deal for this part of the country. I was wondering what connection there might be between water and dairy products but while I was thinking of that I remembered one or two cases with which I was familiar where some objection had been made on the part of the consumer to the irrigation of the product of the dairy cow as practised by the vendor of the product in our city.

I am sure from the mottoes on the wall that live stock means: Alfalfa, clover, rotation of crops, richer land, better crops, more profits, feeding the crops, saving the fertility, less washing of the land. So that there is a definite connection between live stock and the irrigation projects and works which we have been studying and considering for the past two days, and indeed I

noticed that greater emphasis was placed upon live stock as a means to successful and profitable irrigation farming than on almost any other development of that kind of farming. Now the topic I have to discuss with you this evening is

"GRADING UP A DAIRY HERD."

The main facts in connection with animal breeding are so well understood that it would almost seem a waste of time to give consideration to the advisability or importance of the use of pure bred sires in animal breeding. Talks on the importance of this work have been so frequently given that apparently the minds of those for whose benefit the questions are given consideration have become so calloused that the reception of the ideas submitted is rendered difficult. Those who should benefit cast aside the ideas as being of little importance and the product of the minds of those whose business it is to prepare such articles. That this is the case is shown by the fact that the improvement in the annual output of the dairy cows in Alberta is so slow. Had the vital truth of statements similar to those I am about to make in regard to the possible improvement of dairy cattle been grasped and acted upon by the farmers interested in dairying in this country, we should have had in Alberta an average production of from five to six thousand pounds per annum instead of the thirty-eight hundred pounds with which we are apparently content, and which represents the brains and intelligence given by the dairymen of the province to this question. It would appear then that the average dairyman is not exercising his brains to bring about improvement. I would be glad if it were possible for me to so emphasize the practical possibilities of improvement that every man who keeps cows for the production of milk would be induced to adopt those practices which would bring about such improvement. Why should the average man be content with the production of thirty-eight hundred pounds per annum from his cows when he could without proportionate extra expense as to feed, be getting six thousand and even more than that? By extending his ideals he could reach a maximum of ten thousand pounds per cow per annum. Why do we work year after year to produce feed for the thirty-eight hundred pound cow? It seems to me that the same ambition which rendered the settler of this province dissatisfied with conditions in the province or state from which he came, should also force him to reach out for that sort of animal that will produce two or three times the present average output of Alberta's dairy cows. Here we have a soil which is enriched by the stored up energy of generations of plant growth and is so remarkably productive that this year we are hearing reports and witnessing the actual yields of grain which will be considered impossible by many farmers who are residents outside this fertile area which is designated "Alberta". If then we have such a fertile soil, should it not be the aim of every farmer to keep cows whose possibilities for production are as great as the land on which they are kept. The keeping of cattle of this class would enhance the cash returns and would insure the continuance of the fertility of this land up to the present high standards. Thus,

the productive soil which we now have and the high producing cows which it is our privilege to secure, would establish our farmers on the land and enable them to build up homes on the farms that would be handed down to the generations as a heritage, of which each successive generation might well be proud. This idea of home building on the land is one which strongly appeals to me, as I believe it is an idea which must be more firmly planted in our minds else we will have a depleted soil and a changing agricultural population, and will not have that pride in agriculture, that permanence in our home building, that consideration for beautifying these homes and making them attractive, which will tend ultimately to establish in Alberta a type of citizenship which will do more for the province than any oil boom or any other of our natural resources, however genuine or valuable. Our trouble seems to have been that we have been searching for something which has been hidden and have failed to realize that the country's greatest wealth consists of our rich soil which requires only a small investment for its profitable development.

I wish to present to you some figures we have secured at the Experimental station, Lacombe, which go to show the improvement which can be brought about in dairy cattle by careful breeding.

Nominally, men are supposed to keep cattle for the profit they get out of them, but in reality many must keep them for the privilege of associating with cows. Where the average production is only thirty-eight hundred pounds it necessarily means that there are many cows in the province that do not produce twenty-five hundred pounds, and the cow, which is milked for the whole lactation period and during that period produces only twenty-five hundred pounds, is not a profitable cow. She is a boarder and every year she is kept means a loss and the man who keeps her must charge up a great deal to her credit because of the fact that she keeps him from being idle and so keeps Satan from finding mischief for his otherwise idle hands. This is about the only way in which I know a profit could be figured for a great many cows which our Alberta dairymen are providing with bed and board.

As I have stated, we have some figures here which show what can be done to remedy this state of affairs. We have here three charts, giving the production of three herds of dairy cattle. The first chart shows the production of cows which were purchased with the idea of securing a herd which would represent a common dairy herd. This herd is, however, not so common after all, as the average production is about three thousand pounds higher than the average production of the province. The high grade herd of Holsteins under the same conditions of feed and shelter produced in the same number of days over two thousand pounds per head more than the common grade herd, while the pure bred herd produced about thirty-two hundred pounds more during the lactation period, averaging the same number of days.

In order to amplify the figures here presented, we have had under way during the past two years, an experiment to further show the importance of breeding in increasing the production of dairy cattle. This common grade herd is being bred to a pure bred Holstein bull, whose dam has a record of



TABLE NO. 3.

RECORD OF PURE BRED HOLSTEINS AT THE DOMINION EXPERIMENTAL  
STATION, LACOMBE.

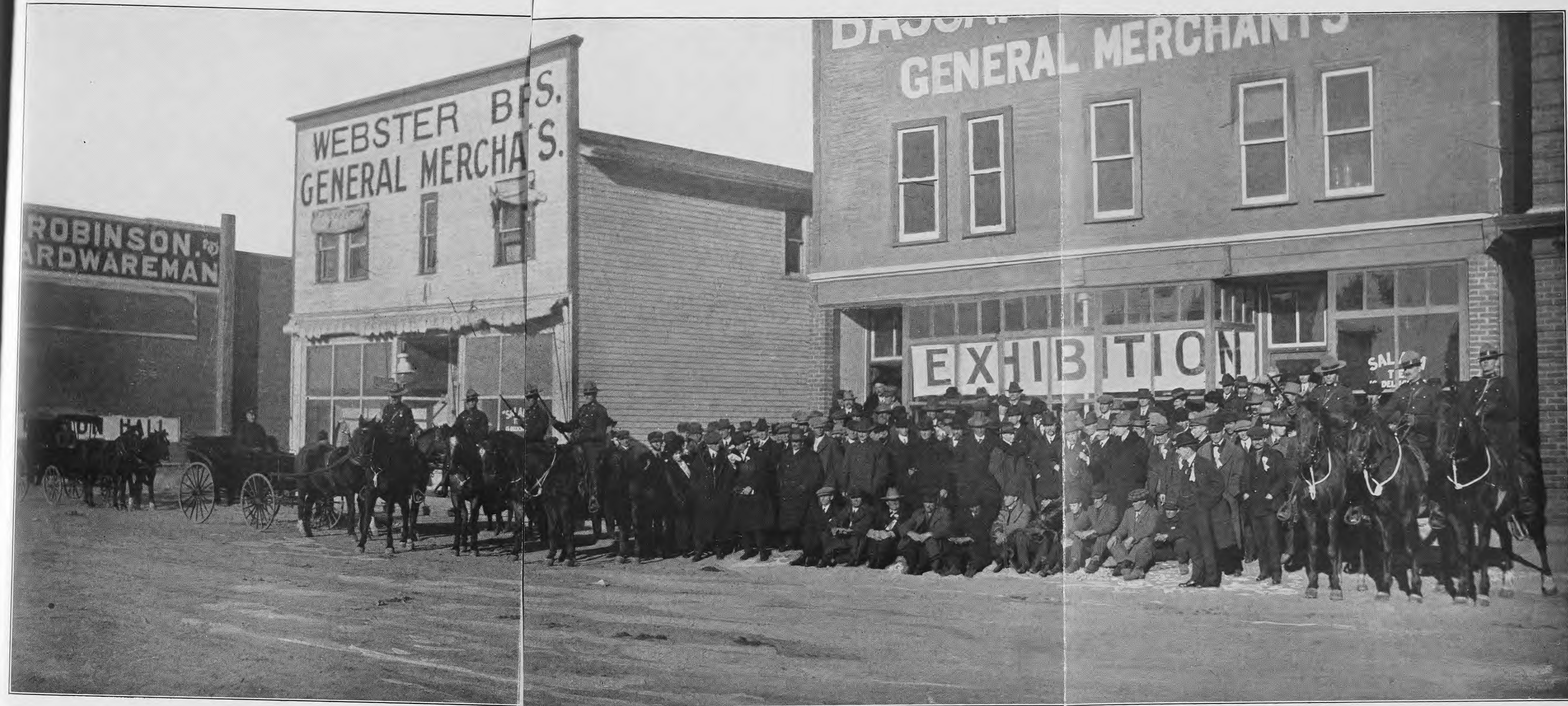
Name of Cow	Freshened	Pounds Milk	Butterfat
Daisy Johanna Ormsby.....	Oct. 29, 1914.	343 10605.0	3.4
Lawncrest Lee Beets.....	May 5, 1914.	338 13824.2	3.1
Lawncrest Rosa Echo.....	June 6, 1914.	318 10240.0	3.3
Lenore Del Berke Star.....	Mar. 23, 1914.	381 10091.1	3.4
Maud Sarcastic.....	Mar. 2, 1914.	230 7233.8	3.0
Nina Gem Lutske.....	April 15, 1914.	301 12038.8	3.1
Princess Margaret Helbon.....	May 14, 1914.	504 10814.3	3.1
Rhoda DeKol Beets.....	Sept. 10, 1914.	269 7364.2	2.8
Vrouka B. 3rd.....	Aug. 3, 1914.	335 7914.5	3.5
Average.....		10013.9	3.1
Average No. of Days in Lactation Period.....		335	
Average Pounds of Milk Per Day.....		29.8	

MR. LAWRENCE: I would like to ask a question of Mr. Hutton. Is there any arrangement made in his particular district that struggling farmers desiring to develop on the lines he lays down can have the use of pure bred sires and if so what is the arrangement?

MR. HUTTON: The male calves which are produced at the Experimental Station are for sale at reasonable prices considering the records of their dams. If a man does not care to buy for himself a pure bred sire, the Dominion Department of Agriculture has a scheme by which he can secure pure bred sires through organization of a band of farmers to enter into an agreement with the Live Stock Commissioner for the Dominion of Canada and a pure bred sire will be sent to them without charge. I do not know that that is a good business. It may be a good way to start. It may be there are communities where no one man is able to purchase a pure bred sire. If there are such communities, then the scheme is valuable and there are a number of communities that have taken advantage of that idea. But, I believe that if a man has funds to purchase he will take more interest in his herd and he will study pedigrees closer and take more interest in knowing what he is getting than if he gets something given to him. That is my idea of it, but the other means is available for securing pure bred sires if wanted.

MR. JOHNSTONE: I have taken the speaker's advice for the past twelve years. I have a pure bred sire and pure bred cows, but I have reached a stage now when I have more stock on my ranch than I can take care of. I would like to sell them. I used to be in Kentucky and I had lots of horses and mules and have a very good recollection of the horses I had to buy. Now, everybody comes to me for a cow and of course knowing of my good cows and also of my bad cows as I do, I do not want to dispose of my good cows. Now how do you dispose of your bad cows?





Delegates to the Convention, Bassano, 1915.





MR. HUTTON: We have a bad cow, a pure bred, with a record on chart as 7,000 pounds. She weighed about 1755 and she will bring something as beef and that is the way we intend to dispose of her. Your average bad cow having been working along these lines for twelve years will be much better than the average cow that a man can buy elsewhere, and I would not hesitate to tell the man the record of the cow that she was not good enough for me but her record was better than the average cow in that country and I want so much for her and if you want to take her on that understanding you can have her.

MR. JOHNSTONE: I have tried to sell her for beef, but people go to other farmers in the district and buy worse cows from them.

MR. ABBOTT: How is it that percentage of butter fat in milk and cream in pure bred cattle is even less than in the common grade?

MR. HUTTON: You will note that when the Holstein cow was first imported to this country, butter fat was very low and that is responsible for the belief that the Holstein cow of to-day gives milk little better than coloured water. I think every one is free to admit that there has been since the Babcock test became more generally used, a gradual improvement in the butter fat contents of Holstein milk, but I am free to say that, in my own opinion, we cannot get or are not likely to get a better butter fat test from a herd of cows that will produce ten thousand pounds or over than we will get from cows giving three thousand pounds or less. They have only a short time to give milk. Some have been bred for generations to that. One of this herd came from a family of beef producers that for generations raised a calf and gave it a fairly good start in life and let it go. That cow tested 4 per cent, but I believe it is possible and I believe producers of Holsteins and Ayrshires as well are improving the butter fat content of their product by selection. When we made the chart here you will notice the test for pure bred herd was shown as 3.1. It could almost be 3.2; 3.18 is the figure that should be on the chart. While we admit the butter fat test is lower than the grade herd, yet the total butter fat of the herd outran that of the common herd.

We have a small herd of Jerseys, but we are not trying them in the same way. We are handling grade cows to Jersey sires. I believe the figures we will get will apply with the same force no matter what breed we might select. I think if you used an Ayrshire sire of high breeding family you will get relatively the same results. We are not using Holstein cows, because we think they are best breed. The argument we use is that the pure bred sire of no matter what breed selected, will bring about improvements.

MR. JOHNSTONE: Some time ago I had a young sire I wanted to sell, also an old one. I found the Government advertising for sires to be distributed around the province, but they said they did not want anything over five years. Now I am rather a greenhorn at this business and I hold that you do not know what sort of sire you have at five years old. At one time I used



to buy a cow because its mother was good. Do you consider when you have apparently a good sire you should use him when he is old or at what age?

MR. HUTTON: Personally, if I had an opportunity of buying an improved sire he would be proven, and in both our herds that was the beginning we made with aged sires proven. Of course, some men do not want an aged sire because they think they cannot handle them on account of their temper. Personally, I prefer an aged sire. I would keep the aged sire until he was twelve or perhaps older. I do not think I would hesitate to keep him so long as he was giving perfect satisfaction.

MR. PEARCE: Have you ever experimented with the milking strain of Shorthorns? I made a hurried visit to Australia and New Zealand two years ago, and I was agreeably surprised to find that the very large percentage of cattle in that country was a breed of milking Shorthorns. As a boy, my father had some and they were good milkers. I have been making enquiries since and find it is difficult to obtain them in this country.

MR. HUTTON: I only know of those herds that the Provincial Government is maintaining. If there are others, I do not know of any of them. They have a herd at Sedgewick which I looked over last year, and the animals were a pleasure to look at. They have animals running ten to eighteen hundred pounds and I don't know but what some are higher than that. For the man who has free grass, as so many men have who are keeping dairy cattle in our part of the country and also here, there will be a Hudson's Bay section and a school section or some speculators' land adjoining where plenty of grass grows costing nobody anything, I believe that the dairy Shorthorn has a very decided place, because the calves raised to steers will produce first class beef at profit and the cows can be milked, and certainly an eighteen hundred pound cow is sufficiently profitable to justify her being kept and one that will produce a good calf, I would also keep.

I have been asked by men who come to me for advice and say that they want to go into dairying, as to whether I would recommend keeping a Jersey, Holstein or Shorthorn and I have recommended the dairy Shorthorn. One man who came to me seemed to have a very wide open mind as to what he should keep. He stated he had 1200 acres of open land near him and nobody was using it, and he wanted to be in the dairying business because he wanted to study a regular income month by month. I said I would certainly recommend a dairy Shorthorn herd for that man, and I certainly think that that breed has a place.

In these records, as I have stated, we are not advocating any special breed. I believe a man should select the breed that he has a personal liking for. It is a matter of selection of breed as much as anything else and if a man is working along the right lines he will get results no matter what breed he is working with, and if a man has free grass and wants to raise dairy cattle and is in a position to look after them, I believe that a Shorthorn is a first class animal

for him to secure. No doubt the breeders finding that there is a demand for this class of cattle will place themselves in a position to supply that demand.

CHAIRMAN: Before calling on the next gentleman to deliver his address, I would announce that the Committee on Credentials will please be ready to bring in their report at the morning session, probably immediately before the close of the session to-morrow morning or shortly before.

There is another announcement I desire to make and that is a good many gentlemen here who for various reasons are particularly anxious to leave Basano on the mid-day train, have asked for a decision as to the point at which the next Convention would be held. This matter will be brought on in the forenoon, and if there is no objection on the part of any one in the audience, the programme will be varied to meet that request. Is there any one here who objects to that change?

(No objection.)

MR. LAWRENCE: I take it that that question will come on immediately before the adjournment for lunch?

CHAIRMAN: Yes.

I will now call upon Mr. D. W. Hays, Chief Engineer, Southern Alberta Land Company, who is going to address us on "Cost Accounting on the Farm".

MR. HAYS: A system of accounting has been kept by the Southern Alberta Land Company which gives a very detailed record of the various costs of farm operations, and I have been asked to prepare a paper setting forth the system in question, to be presented at this Convention.

The system referred to is developed from a system used in construction work. Its purpose was to find the cost on different construction works, and at the same time the cost of the great number of labour operations and materials and supplies which are a part of construction works. This information is required firstly, to account for money expended, and secondly, to place the man who is responsible for the work in a position to know each week or month the relative cost of work done by different superintendents, camp foremen, etc., so that a comparison can be obtained of the relative merits of the different men to accomplish work, and thirdly, to know from the comparison which is available where to look for waste and defects. Such comparisons when placed before those doing the work naturally encourages the man who has deficiencies to overcome to do better and prompts the man who has done well to maintain his standard of usefulness. These results are attended by improvements in methods and stimulate active work.

A description of the system referred to as related to farm costs would no doubt be of interest to any company operating on a sufficiently large scale to require the use of a book-keeper. Any system of accounting to obtain any definite conclusion as to the costs of farm operations would be practically as extensive on a small farm as on a large one, the difference being that the larger farm deals with larger figures, but not necessarily more detail.

In presenting a paper before this Convention it is advisable that its contents should be applicable to the service of the majority of those who may be in attendance. To present a paper on the question of farm accounting descriptive of a system which might be useful to the man who farms and who also has to do his own book-keeping, naturally requires that it should be simple and require the least amount of time. This is not easy to do, and my best efforts in the matter will I am afraid frighten a good many who have any idea of undertaking the task; but I undertake the description with the thought that if any individual sincerely wishes to keep a reliable record of costs for various farm operations, he is willing to devote a certain amount of time to the purpose. The system, as I will explain it to you, may from the description given, appear too elaborate and be difficult to use. It is not, however, as difficult as it may appear, and anyone by a little study will find that it will not take up more time than any other system of book-keeping.

Accounting is a matter of arithmetic, a knowledge of what debit and credit means, and not least of all thoroughness, and by the latter I mean prompt and correct entry of any business transaction as the item occurs. You cannot expect to carry your business transactions in your head to be entered up to-morrow or next week when you think you have more time. Such delays lead to omissions and errors, and any sort of book-keeping that is unreliable is worse than no book-keeping at all. It may lead to a quarrel with your neighbour, your banker, or your merchant, to say nothing of the fact that your efforts to fulfil your original intention of keeping accounts is a waste of time.

I think that I am not exaggerating in the statement that nine out of every ten farmers have little other knowledge of the result of their farming operations than that they owe a certain amount at the bank or that the bank owes them for deposits they had the good fortune to make some time preceding. A good many will not know what they owe at the store, they may have an occasional slip or two for goods furnished and they pay when the crops are sold on a statement furnished by the book-keeper at the store, on which appears the item "To Accounts Rendered". You have long since mislaid the bills, but because you think the man who runs the store, or his book-keeper, is all right, and you remember having gotten certain things, you conclude that you must owe what the statement says, and you pay.

You have all no doubt heard references to someone's success in business, with remarks that it was "luck", "good investment", or "good business", and each of the reasons or any other which may be offered, come down to the one reason, "good management", and good management means to know that what you are doing will make money.

In the manufacturing world at the present time there is the keenest competition in the sale of all manufactured products, and every manufacturer is endeavouring to cut down his costs, and at the same time he must maintain a certain high standard of goods. His profits, or even his ability to stand the test of keen competition, must be based on a definite knowledge of the cost of each and every part of any commodity produced, and the success in this is

dependent upon his position to detect and prevent leaks, wastes, and other defects which will take a share of his profits. He does this by careful analysis of costs. There are a number of systems used by railroads, manufacturers, big contractors, etc., that supply the information needed, but there has been little or no effort to apply the same business principles for the assistance of the farmer in his line of operations. It is frequently said that a man who keeps good records and accounts will never go broke. He knows where he is losing money, and common sense will tell him to leave unprofitable things alone. This statement cannot be used better than in its application to the interest of the farmer. If you can make money as a result of good accounting, why not make that specific work a part of your business in farming and devote as careful attention to it as you would to any other farming operations. I cannot emphasize too strongly that any system of accounting requires diligent attention. No half-way attention will give you results and without results your efforts are waste of time.

Every book-keeping system requires the use of ledgers. Where personal accounts only are being kept, that is accounts dealing with people with whom you are doing business, a "Personal Ledger" is used only. With large business concerns, records are kept in a "General Ledger" which deals with impersonal accounts such for example as stock, inventories and miscellaneous items with which the book-keeper desires to obtain record and results of certain business transactions. When both ledgers are kept it is known as the double entry system, the handling of which is simple to every accountant.

The information most useful to the farmer would be a knowledge of what various farming operations may cost. Such information would be valuable to the farmer, as it may point out what operations are least profitable, and if the cost accounting is made in sufficient detail, the records will point out certain particular items of cost that have made that farm operation unprofitable. With such knowledge it is indicated where improvements are required.

Any cost-keeping system should have the merit of meeting established principles of book-keeping. Where used by large concerns the cost-keeping records must be part and parcel of the accounting system as a whole. For a complete set of books as would be required by a large company, three ledgers would be necessary, Personal Ledger, General Ledger and Cost Ledger. These might be all under one cover in a loose-leaf book if the amount of business done was not too great. Every business transaction would be shown in two of the ledgers, which is the ordinary double entry system.

The system of cost-keeping as hereinafter described will meet these requirements, but to the farmer or any one not responsible for certain complete returns, as in the case of a large company, it is not necessary that he should bother himself with all the various records, ledgers, balance statements, etc., that go to make a complete set of books. It is the purpose of the following description to set forth only that part of the complete system as will be serviceable to a farmer to keep track of his money transactions and to ascertain what farm operations cost.



## DESCRIPTION OF COST-KEEPING SYSTEM.

## VOUCHER RECORD.

The system requires the use primarily of a sheet called a "Voucher Record". The voucher record gives a record of purchases and sales and shows the classification of expenses and receipts to the various accounts which you may desire to keep. It is essentially a memorandum of your business transaction, and if properly kept furnishes sufficient information by which any book-keeper could at the end of a month or end of a year, complete all ledger accounts and make complete and proper returns for every account.

A representation sheet of a voucher record is shown below:

## VOUCHER RECORD.

FOLIO NO. 1

MONTH OF AUGUST, 1915

		Account	Charged		Cost Ledger		General Ledger		Personal Ledger	
			or							
Date		Credited	Dr.		Cr.	Dr.		Cr.	Dr.	Cr.
John Smith	Aug. 2									50.00
		47	30.00							
		25	20.00							
Bassano Trading Co.	Aug. 15									120.00
		Stores			120.00					
	Aug. 25	Stores					60.00			
		47	60.00							
Time-book	Aug. 31	Labor					27.50			
		2	14.25							
		3	2.75							
		44	10.50							
		Living Expenses					6.00			
		Labor			6.00					
John Smith										
Cheque No. 10	Aug. 31								50.00	
		Cash					50.00			
			\$137.50		126.00	143.50	50.00	170.00		

## GENERAL CLASSIFICATION SHEET

MONTH OF AUGUST, 1914.

SERIES 40

Folio 40	Folio 41	Folio 42	Folio 43	Folio 44
				1 10.50
Totals				\$10.50
Folio 45	Folio 46	Folio 47	Folio 48	Folio 49
		1 30.00		
		1 60.00		
Totals		\$90.00		

Note:—These sheets in a loose leaf book are used as a memorandum to add up the figures chargeable to any Account Number as the items are taken off the Voucher Record. The total under each Account Number is then transferred to the Cost Ledger.

It is necessary in accounting and particularly if you desire to keep cost accounts, that you should show when you make a purchase just what that purchase was for. The Voucher Record has three columns headed respectively, Personal Ledger, Cost Ledger and General Ledger. Every transaction must appear under two of the headings. This is for the purpose of showing where you got the item of expense and then what you did with it or what it was for.

For example, referring to the representation sheet of the voucher record, suppose you bought goods from John Smith's store amounting to \$50.00, you would enter on the Voucher Record a credit to John Smith and as the account is "personal", you would show \$50.00 under the heading "Personal Ledger". Supposing \$30.00 out of the \$50.00 was for binding twine and \$20.00 for groceries. The Binding Twine was bought say for Oats and the groceries are naturally Household Expenses. You would therefore enter against the item "Growing Oats" a charge or debit of \$30.00 and against Household Expenses a debit of \$20.00. These are placed under the heading of Cost Ledger because they are items of expenses definitely chargeable as a cost against these respective accounts. This would balance your credit entry first made to John Smith and shows what you have done with the goods bought. When you pay John Smith you enter under the heading "Personal Ledger", John Smith debit to \$50.00 and to balance this you enter under the heading of "General Ledger" a credit to "Cash" \$50.00.

Cash is an impersonal account and is therefore placed in the General Ledger Column. You will observe that every entry made requires that a like

amount be entered up on the opposite side in one of the other ledgers. A debit entry is always balanced by a credit and vice versa. The sum of the debits under all three of the Ledger headings will balance the sum of the credits.

It is presumed that in almost all cases when a purchase is made that it is for some specific purpose, and as such could be directly charged out to some particular feature in the Cost Ledger with which you are keeping accounts, as in the case of items just mentioned. If, however, you were to purchase goods, and you did not know at the time of making the purchase just what the articles might later be used for, it would be necessary that you keep track of the expense for the goods in a special account for the purpose. Such an account would be an inventory account, and as such is an impersonal account that would be entered up in the General Ledger. It naturally could not appear as a "Cost Ledger Item" because for the time being you do not know for what the articles in question may be used. These are reasons why the General Ledger is required, and unless every purchase of goods is made for some specific purpose to which it can be charged in the Cost Accounts, the use of General Ledger Accounts are necessary. As an example of the foregoing method of handling such accounts, suppose you purchased from The Bassano Trading Company one thousand (1,000) Grain Sacks for \$120.00, and you do not know at the time for what purpose the sacks may be later used. You would credit The Bassano Trading Company under the Personal Ledger Heading in the usual way and charge the same amount under the General Ledger to, say, "Stores". This would be an inventory account and you are holding yourself responsible for the value of the sacks until you have use for them.

Later you may use 500 of these sacks for Oats; then you would credit the "Stores" account with 500 sacks \$60.00 and charge to Oats. The remainder of the sacks would be left in the Stores Account until you had further use for them, when you would again relieve the Stores Account by credits and debit to whatever purpose the sacks were used.

Cost-keeping can be very much simplified if every purchase made can be directly charged out in the Cost Ledger to some account for which the expense was required, then no account of the character of stores would be required in the General Ledger. If all purchases cannot be charged direct to the work, then the Stores Account is necessary if correct costs are to be obtained.

#### COST LEDGER.

All accounts that you desire to keep relating to the cost of any particular farming operation or in fact relating to any expenditure whatever on the farm, may be divided up under special headings as "Capital Expenditure, Farm Maintenance, Living Expenses, Livestock Operations or Various Crop Growing, etc." These are kept in a Cost Ledger for which a special ruling is made in vertical columns, so that the cost for each month and the total cost to date can be obtained for any feature.

A representation sheet of the Cost Ledger is shown.

## MONTHLY COST LEDGER

## CAPITAL EXPENDITURE FEATURE

Acct. No.	Classification	Month of Aug., 1915.		Month of Sept., 1915.		Month of Oct., 1915.	
		This Month.	Total to Date.	This Month.	Total to Date.	This Month.	Total to Date.
1	Buildings,						
2	Wells, Roads, Fences, Trees, Lawn and Mis- cellaneous Improve- ments,		14.25				
3	Breaking Land		2.75				
4							
5							
6							
7							
8							
9	Depreciation						
	TOTALS		\$17.00				

## MONTHLY COST LEDGER

## GROWING OATS FEATURE

Acct. No.	Classification	Month of Aug., 1915.		Month of Sept., 1915.		Month of Oct., 1915.	
		This Month.	Total to Date.	This Month.	Total to Date.	This Month.	Total to Date.
40	Ploughing, Discing and Harrowing in Prepar- ing Land for Seed,						
41	Fertilizing						
42	Seed						
43	Seeding						
44	Harvesting		10.50				
45	Marketing						
46	Miscellaneous Labour						
47	Miscellaneous Ma- terials & Supplies		90.00				
48							
49	Depreciation						
	TOTALS		100.50				



A page is devoted to each particular feature, as for example the feature headings given above. Under any one of these headings there are required various labour operations and various materials and supplies that enter into the total cost, with which you may desire to keep account. These items are called "Classifications", and for convenience are dealt with by Account Numbers. By the use of numbers you can quickly refer to charges as they may be marked on bills, or make any necessary entries without having to write a long description of some particular classification of work or materials.

Suppose you desire to keep the cost of Capital Expenditure on your farm. You might group all charges under one number, say Account Number 1, Farm Maintenance might be Account Number 2, and so on, but if it was desired that the cost of the various things that go to make up the total Capital Expenditure charge should be segregated, they could be itemized under a group of account numbers, say 1 to 10, as follows:

FEATURE:—CAPITAL EXPENDITURE (this would be the Ledger Heading).

Acct. No.	Classification
1.....	Buildings
2.....	Wells, roads, fences, trees, and miscellaneous improvements.
3.....	Breaking land.
4.....	
5.....	
6.....	
7.....	
8.....	
9.....	Depreciation.

Under this classification you will note that Numbers 4 to 8 are not used. These are purposely left so that should any new item of cost come up under the heading "Capital Expenditure", there would be a place for it. As for example, say that after making the above classification it was found that you wished to grade or level land and put in a drainage ditch. In the space left for Account Number 4 you could write "Grading and Leveling", and after Account Number 5, "Drainage".

Assume that another cost account is "Growing Oats". The whole cost of growing oats may be bulked under one number, as, say, No. 4, but if you desire to know the cost of various operations necessary to grow oats, say on a one hundred (100) acre tract, a classification might be made as follows:

Account No.	Classification.
40.....	Ploughing, discing, harrowing, etc., in preparing land for seed.
41.....	Fertilizing.
42.....	Seed.
43.....	Seeding.
44.....	Harvesting, Stooking and Threshing.
45.....	Marketing and Freights.
46.....	Miscellaneous Labour.
47.....	Miscellaneous Supplies and Materials.
48.....	
49.....	Depreciation.

These classifications may be as extensive or as limited as desired. The number to represent various labour operations or other classifications should be decided upon, depending upon what each individual thinks will serve his purpose. It does not take long before they are fixed in the memory, and when any item of expense comes up it is at once thought of as coming under a certain number. The same number can be used year after year. It is good policy to set aside a certain series of numbers to be used for special purposes. They may not all be used, but if the cost of some particular thing is wanted, there is room provided within the series. The Account Numbers should be arranged to come in logical order for particular purposes, otherwise confusion would result in irregularity of numbers used under any particular feature, and trouble result in finding the number on the Cost Ledger Sheets for the purpose of making an entry.

## LABOUR CHARGES.

Nearly every person who hires men keeps a time-book. This certainly is always done by anyone who hires day labour, and it should also be done when hired men are paid on a monthly basis. In order to classify labour costs for various farm work done, a time-book is ruled to provide a column in which to place an account number to represent the particular work done on any day by the man working. The ruling of the time-book is shown here.

SHEET NO. 1

TIMEBOOK

MONTH OF AUGUST

No.	NAME Occupation	Acct. No.	1	2	3	4	5	6	7	8	etc.	Total Time	Rate	Amount Earned	Total Earned	Board	Stores	Rent & Hospi- tal	Total Deduc- tions	Amount Due
1	Johnston, H. Laborer	2 44 3	x	x	x							3 2 1	2.75 .. ..	8.25 4.50 2.75	15.50	3.00	-	-	3.00	12.50
2	Brown, J. Laborer	2 44	x	x	x							3 3	2.00 ..	6.00 6.00	12.00	3.00	-	-	3.00	9.00
															\$27.50	6.00	-	-	6.00	21.50

Summary  
 Acc. No. 2 14.25  
 3 2.75  
 44 110.50  
\$127.50

At the right there is a column for "total time", in which you enter the sum of the number of days worked under any particular account number. By applying the rate of wages, the column following shows the amount earned for each class of work done—the total of this column, of course, being the amount earned by the man for the month. Following the column "Amount Earned" you will note columns for deductions, which are headed "Board", "Stores", "Total Deductions", and lastly a column "Amount Due".

The item of "Board" is entered in the time-book for the special reason that if you were accounting for a man's labour at a figure per day, which does not include the cost of feeding the man, you are losing track of that cost. Even if the man has been actually hired at, say, \$40.00 per month and board, you should in your time-book add, as wages, a sufficient amount to cover the cost of feeding him. Let us assume this at 50 cents per day, which, added to his net wages per day, may be considered as his gross wages. This gross amount will then be distributed proportionately as a charge to the various work done by him. The amount added for board is thereafter deducted from the total amount earned to obtain the net amount due. If an account is kept in the Cost Ledger on the cost of Living Expenses, the deduction for board is made as a credit to that account.

One very important item in obtaining the correct costs for work done is to keep time on the work done by yourself. This is not required, of course, in connection with cash payments, but that the service rendered by you shall be properly accounted for in finding out the cost of doing any particular work. Put yourself down at \$75.00 per month, or if you think you are an extra good sort of a hustler in keeping things going, make it \$100.00, but at all events keep track of the value of your own services as part of the cost of the several farm operations.

#### WORK STOCK.

The Work Stock used should be carried in the time-book in the same manner as for the time of a man. The charge is made to the Account Number representing the particular operation of work for which the horse is used. A fixed amount per day should be charged to cover the estimated cost for feed and care of the horse, say 50 cents per day. This estimated cost is then distributed over the work as the labour of each horse is accounted for.

In the Cost Ledger an account should be kept dealing with the expenses of the barn or corral, to which you charge feed, labour, etc., that are necessary for the care of the horses, and by keeping track of the horses cared for the actual cost per horse per day can be obtained each month.

If a horse is idle the time for that day can be charged to an Account Number designating "Idle Time" under a heading dealing with General Maintenance of the Farm.

## MISCELLANEOUS CHARGES.

There are a number of miscellaneous charges taken care of by the Cost Ledger. One of these is the General Maintenance of the farm, which I have just mentioned in the foregoing. This account is one that is used to charge all such items as Idle Time, Taxes, Miscellaneous Supplies and Labour, and a number of other items that are incidental to the farm as a whole but not to any specific farm operation. This account, General Maintenance, can be apportioned to the specific farm operations at the end of the year.

## DEPRECIATION.

It is observed in the list of Account Numbers given the item "Depreciation". This item should appear as a charge to every farm operation on which equipment is used. In the General Ledger there is an account of "Equipment" to which has been charged every purchase of tools or machinery. Equipment naturally becomes of less and less value as the articles are used or lost. At the end of the year, before making the final entries, a new valuation should be taken of the equipment on hand, and the difference between the value determined at that time and the original purchase price ascertained. This difference in value is credited as "Depreciation" to the "Equipment Account", and this amount, as near as you can approximate, is then apportioned as a charge to the Account Numbers representing the work on which the equipment was used.

## INVENTORIES.

At the beginning of each year, a physical inventory is taken of equipment, livestock, farm produce, and in fact all things that are a part of the farm assets. The value of many of these articles must be estimated, and the total value is entered up as a charge against an Inventory Account. For example, as Produce may be used in connection with the farm work, the Inventory of Produce, say Hay or Grain, is credited and a debit entry is made in the Cost Ledger against the cost of the Corral. These inventories are checked up from time to time, so that any large errors may be adjusted. It is one of the most essential things in keeping correct costs of work, or in fact accounting for your business generally, that you know what assets you may have on hand from time to time and what is done with them.

The foregoing description, as related to cost-keeping, while necessarily somewhat long, is not as difficult of handling as it may appear. For the purpose of obtaining cost of work the following would be necessary:—

A Voucher Record, on which to keep a memorandum of your business transactions as they occur from day to day; a Time-book, ruled as described; Cost Ledger Sheets, ruled in a manner so that the cost of work month by month and totals to date may be entered, and the Classification Sheets so that you



may keep, as a permanent record and for reference, the charges as they are taken from the Voucher Record and are added up for a total to enter into the Cost Ledger. These will supply all necessary information to obtain costs of any or all operations required on a farm. From the costs obtained in comparison with areas, crop yields, etc, the relative unit cost of any labour operation or other information may be worked out.

Every farmer should in addition, however, know what he may owe, or what is owing to him, for goods bought and sold, and a record of such transactions should be kept in a Personal Ledger. The entries can be made when the time is convenient for doing so if you have kept in the Voucher Record these transactions as they have occurred. A part of the Personal Ledger may be used to keep such General Ledger Accounts as Stores Account or Inventories of Farm Produce, or other things that cannot for a time be directly charged to some particular work accounted for in the Cost Ledger.

To large concerns having a book-keeper and to anyone familiar with book-keeping the use of the Voucher Record makes all Ledger Accounts, and the relation of the cost-keeping records to the ledger accounts apparent. Where books for large concerns are closed at the end of the year, the Cost Ledger Accounts for any operation are written off as a debit to Revenue Accounts in the General Ledger, which deal with the returns from the farm.

MR. PORTER: I have been impressed with the matter of keeping records. It seems to me that a man should not run a business and not know what part of his operations are paying or losing. We are making mistakes and it is the wise man who profits by the mistakes he makes and changes his methods by not making the same mistake over and over.

You often see men in business who make no effort to keep a record of what they do in a financial way and they will continue the same line of operations and lose money on it year after year. They may come out on the proper side of the account at the end of the year in the total, but any loss they have they are making up by an extra profit on something else. If they would follow some system of cost-keeping and know which is losing and eliminate the cost of keeping it, they would not go on. It is the same with cows that you find are not making a good record, you dispose of them. On the farm a boy or girl who had business training in any way should have a knowledge of keeping accounts.

I trust that the able manner in which Mr. Hays has gone into this matter will benefit those who have heard it and I hope they will not say it is too complicated. I hope they will try to start a system of cost-accounting and get the idea of the importance of it, and if they will keep the voucher record and show the money they spend and how much they receive, then the boy or girl can very readily be trained to work up the other accounts and items themselves and show how much has been gained or lost on any transaction.

The older farmers will say that they have not time to keep books. It is too much trouble to fuss with them. I lived on a farm for twenty-two years

and I know what it is. It only takes a few minutes to put down what you have to keep record of and the rest may be worked up at a later time. If you do not want to go into an elaborate system take it to a book-keeper, start some sort of record or get the boy or girl in the family available to do it. I think you will find it to be a very valuable investment of the time they are taking and will prove one of the most profitable things they can undertake.

MR. BARK: Mr. Chairman, I too, believe a good deal in the sentiments expressed by the former speaker and I want to say that this is one of the most complete sets that could be used and is well adapted for the keeping of those things. I believe the farmers should keep track and know whether it is profitable to keep hogs and feed them and whether it is profitable to keep dairy cows, or whether it is profitable to raise alfalfa or whether they are losing money on grain.

I have spent a good deal of my time on the farm and I do not yet see how farmers, farming as I have had to farm, would have the time or inclination to keep such a set of books that would keep them up to date. I know how as a kid back East on the farm, after having milked seven or eight cows and having fed the hogs and pigs, I would sneak up the back hall with a lantern to the bedroom at ten o'clock at night as tired as a dog, and that happened every day, and there was plenty of time on the Sundays to mend the harness and I did not get time, and Dad did not get time to keep books, and we never knew whether it paid to keep a cow or calf or whether we should knock him on the head.

As I said before, it is the most complete and the best set I ever saw and I feel it is a necessity for farmers to keep a system like that, yet I think there is a missing link somewhere—the time to keep it or a simpler system, or just go without keeping it will do. I remember how tired I was when I sneaked up there and Dad would call me long before I knew it was time to get up. Don't take me for a moment as deprecating the value of that set of books, because I would not do it for the world.

MR. HAYS: This system may appear complicated, but for any man who is handling 160 acres of land and using the usual number of men on his farm, I will keep all those records on his farm in ten minutes a day. He can by the expenditure of that much time in the evening and in half a day's time in one day in the month work up this sheet here and by those figures find out whether he is losing money or making his best profits, and therefore increase his profits during the following year. Is that not much more worth while than going out to milk an old rip of a cow that does not give enough milk to pay for her keep?

MR. LAWRENCE: I never was the man that would start work before daylight and work up to ten o'clock at night as Mr. Bark says. I would not care to do it. I have frequently written up to twelve o'clock, but still that is not milking cows. It is not that kind of manual labour. This is what I want

to say. There was an old Devonshire farmer that I knew in my younger days, and a Devonshire man and a Scotchman are both about on the same level. They look not after the dollars and cents, because we have not got them at home, but they look after half-pennies and farthings and see that they do not get on the floor or in the chinks. This farmer of an evening would have his boys who had left school, come in and sit down and report to him what he did not know in regard to the work of the men on the farm. I used to enjoy the fun when I was staying there. This was his system: the farm had a number of fields. He was farming, I suppose 1400 acres and begrudging the very ground that the fences stood upon—cultivating right up to the fences. You could not open the gates the full width for fear of knocking the crop down. It was all mapped out. Every field was known either by name or number. There was at least ten teams at work on the farm and as many carters and a boy with each carter. Each boy had to show where every man had been working on that farm; whether it was on this field or that and what he had been doing and that was all put down to the account of that particular field, so it went on right from seeding to harvesting, each at a certain time, whenever it was. The cost of the farm was worked up in that way. There was so much a day for a horse and so much a day for a man, so much a day for a boy and that was all put against the field they had been working in. I would like to ask Mr. Hays whether his system of accounting takes in things in that way so that you could see how much the cultivation of the twenty acre field cost at the end of the year and be able to see exactly the expenditure in detail and in the gross.

MR. HAYS: I tried to cover that ground here. I said in the first place, you are dealing with a certain particular feature. Suppose it is oats you want to know what the cost of operations will amount to. You can divide that up to any number of operations. You can make it ten or two or a hundred, but divide it up to some particular expenditure that you can classify. Do not try to sub-divide it into such a fine point that you cannot classify. Keep track of seeding, ploughing, harvesting, stacking, threshing, etc., and you can add to them or change them, but each one of these classifications is represented by the account number to be fixed in your mind. Say that you will classify under 40 and so on. You have a man working on field named H. Jackson. He is out there ploughing. He ploughs say, on the first and second. You would put in this column right here, the figure 40 and a cross there showing those days and so on. Then the next day, he may be hauling fertilizer or anything and it is charged up to 41. You keep track of the man's time as you would in a time book. I venture to say that a man hiring men keeps a time book and he places down first the number of the operation that man was on, on that day, and then at the end of the month he finds he worked so many days on account number 40 and so many on 41 and you put it on that sheet there.

MR. JOHNSTONE: As my friend has referred to my nationality, I might say I always like to make money and I always want to know what it costs. I

agree with the whole system of book-keeping. I tried to keep books and keep track of the details, but I found I was losing money. In actual practice, I found I had everything I wanted. The reason I did that was that I put so much down for my time and for many years I had been doing it and so many months a year I was spending to see if I could not interest fruit growers and to see if I could not buy bran and shorts direct from the farmer and I put my time on that and found I was losing money. When you come down to the details and find you are losing money, if you are a Scotchman I advise you not to do it. If you are going to keep a system of book-keeping that will show you losing money, don't do it.

MR. STOCKTON: I have used the account number system that Mr. Hays has explained, and I want to make a suggestion for some who think it too elaborate. Many farmers do not even keep a time book, but the basis of that system is the time book and the farmer can go quite a ways in keeping cost. If he would keep an inventory once a year of his equipment and stock and a pass book in which he shows the money he has expended for material or supplies, and the money he has received and makes his cost record in this time book, he could do it without changing Mr. Hays' system except in one respect. Instead of using the account number and having additional books, to have the time book a double page one with space sufficiently large so that you could write in whether the man is ploughing or seeding or what field he is working in. In that way, the time book will contain the basic record from which he can make up most of the cost he might particularly need or be interested in. That is just a suggestion for some one who thinks the system is a little beyond him in elaborateness or time that might be occupied in keeping it.

MR. LAWRENCE: Is any provision made for keeping stock and gain at the end of the year?

MR. HAYS: I stated, at the beginning of the year a person should take an inventory of every farm asset. Take dealing in horses; he has a certain valuation for his horses and charges up to the inventory account for horses that valuation. If he sells some, it is credited. Naturally the same thing applies to steers you might buy and all sorts of things usually on a farm, but not used right away. Simply put them in stores as it were and hold yourself accountable for what is taken out of that and charge it to whatever the equipment went to. It is very important, I am sure, that every person should take an inventory of what he has, otherwise he has no idea of what he is doing. His bank account might look good, but if he was to take stock at home he might find himself very low or vice versa. He would not be able to tell what the profit or loss in any feature was unless he knew what he had on hand at the beginning of the year and what he had sold or lost. Every transaction is on that one sheet just day by day as he goes on. He does not have to do anything but enter that up and I am sure that a man handling men would keep a time book. If



they will mark simply what they are doing and bear in mind that a number simply represents that particular work he will have no trouble in keeping the account.

MR. FREYBERGER: I would like to ask Mr. Hays whether or not it is possible to buy a set of books or what he would charge to make a set of them and what he would charge for half a day's instruction. I hardly agree with Mr. Hays that the average farmer is very negligent in keeping accounts. As a matter of fact if farming was not such a paying business, most of us would fail, but the fact is that it pays so well we can have many losses and yet come out on top. Most of us have sense enough to keep some books, but the trouble is that we do not want to. We are tired, of course, but we are not too tired to go out and carry a bucket of slop to the pigs or shut a door or gate that we happen to forget and left undone, if it is going to pay us and I for my part would like to keep the set of books. I do not know that I care to learn how to do it. I have got some boys I would like to learn to do it. I would like Mr. Hays if possible to teach them if he has got time.

CHAIRMAN: The report of the proceedings of this Convention will be printed and I was going to ask Mr. Hays if he would have it prepared in such a form that it could be published and that would perhaps meet with the wishes of this gentleman.

MR. HAYS: Attached to these typewritten sheets will be some sheets showing what you want. There is no place you can buy these sheets because we make them up for ourselves here. They are taken from sheets used in the States and from knowledge I have gathered dealing with them for over eight years. I might say too that the organization for which I am working has expended over one million dollars and over 50 per cent of this has been kept track of by this system and there are thousand and thousands of dollars that have been dealt with and there is no other system that I know of, and I have looked into the matter for some fifteen years, that gives you the cost of any one operation that may come up.

As to teaching you or spending half a day with you. In the first place, I am not an accountant, neither am I a farmer. My business is an engineer and I was asked to present this paper to you in the first place, and I found it most difficult to put it into shape for people who are not book-keepers and do not possibly understand the meaning of credit or debit, but I will be glad indeed to show Mr. Freyberger or any one else who is interested in this matter and I will be glad to devote what time I possibly can to it and also to supplying them with sheets for this system. I have had experience in introducing this system to scores of men in years past and any one with a common knowledge of arithmetic can get it very quickly and I will guarantee it will only take ten minutes to enter up this record in a day and that record will cover all your transactions and at the end of the month you can clean up the whole thing in four or five hours, but that does not include keeping the inventory. It only covers the cost.

CHAIRMAN: This closes the evening session. The Convention is adjourned to to-morrow morning at 9.30 a.m.

THURSDAY—MORNING SESSION—NOVEMBER 25TH, 1915

MR. WILLIAM PEARCE, in the Chair.

MR. LAWRENCE: Reads the following resolutions which have been before the Resolution Committee:

Moved by William Pearce,  
Seconded by C. E. Lawrence,

WHEREAS an accurate knowledge of the location, quality and quantity of water supply available is the basis of irrigation development, and;

WHEREAS the matter of topographic and hydrometric surveys to determine the location and quantity of such water supply and the proper methods of conserving it must be undertaken by the Government administering the law relating to the use of such water, and;

WHEREAS it is understood that the Governments concerned find it necessary to curtail expenses as much as possible, and;

WHEREAS it would be a great misfortune if the work already started should be interrupted, as records missed cannot be recovered;

THEREFORE be it resolved that this Convention urges strongly upon the Dominion Government, and the Government of the province of British Columbia, the importance of making the necessary appropriation and providing the necessary staff to continue, without interruption the work of gauging all streams of water supply.

Carried Unanimously.

Moved by E. A. Howes,  
Seconded by H. B. Muckleston.

WHEREAS it has been of benefit to this Association to have first hand reports for our own annual report to our delegates of other Irrigation Congresses, and

WHEREAS it enables this Association to report on and invite to take part in our own convention, speakers from across the line,

THEREFORE be it resolved that this Association authorizes its Executive so far as financial conditions will permit, to send one or more delegates to the Oregon Irrigation Congress at Portland in January or February, and to the International Irrigation Congress in the United States, wherever it may this year be held.

Carried.

CHAIRMAN: I will now call upon Mr. F. H. Peters, Commissioner of Irrigation, Calgary, Alberta, to address you.

MR. PETERS: Mr. Chairman, Ladies and Gentlemen,—Always before when I have had the pleasure of addressing this Convention, I have spoken on some subject directly concerning the work under my charge which was being carried on by the Irrigation Branch of the Department of the Interior and so have been able to speak with some assurance.

This time when your Secretary was kind enough to ask me to give an address, I felt that these fields had been pretty well covered and so I determined to speak on the subject chosen that is:

“THE VALUE OF THE WESTERN CANADA IRRIGATION ASSOCIATION TO THE  
FARMER”

This means speaking on a matter of opinion and not of fact, so that I am not able to speak with the same degree of assurance as formerly. The subject is one that I have been thinking about for a considerable time and I trust that you may find it of interest; if you do not, I will, in any case, be very glad to have had this opportunity of giving expression to my feelings for the purpose of getting the matter on record and in the hope that it may do some good.

The questions to be answered are—

Why is the Western Canada Irrigation Association in existence?

What are its objects?

How are we trying to gain these objects?

What is the value of the Association to the Farmer?

The last point “What is the value to the Farmer” is the one that I am really trying to get at and analyze, because I believe that basically the Association is for the benefit of the farmer, that it does benefit the farmer, and that in the past the farmers have not taken as much interest as they should in the Association. My feeling is that if I can make any of you see eye to eye with me in this matter then you would take more interest, which I think would be a very good thing. I would explain here that I mean these remarks regarding the interest which is taken by the farmers to apply mainly to Alberta and Saskatchewan, because in British Columbia the actual farmers have shown a greater interest in the Conventions and have given them more support.

That this Association has been of great benefit to the farmer must be clear to anyone who will read over the reports of the previous Conventions held, and if any person in the audience doubts this statement I would suggest that he obtain these old reports and go through them and after this I feel quite satisfied that he will agree with me.

I have quite recently read these reports and while I cannot say that this is the only cause for carrying them out, I found that nearly all the work for aiding irrigation undertaken by the Dominion Government has been previous-

ly considered and urged upon the Government by this Association. I would mention as some of these, the proper carrying out of the stream measurements and irrigation surveys, the creation of the Forest Reserves to protect the sources of water supply, and the establishment of demonstration farms, while in-so-far as the Provincial Government is concerned, considerable discussion and strong resolutions were passed concerning the agricultural schools which have since been established and proved to be so very successful. These questions are very big ones and are of great importance. What I have noticed in reading through the reports particularly is the lack of discussion by the actual farmers and noticeably the lack of discussion of detailed methods of farming, that is to say such questions as just how to apply the water and when to apply it, etc.

Now as regards the reason why this Association is in existence, I turn to the Constitution of the Association and find the objects set forth as follows under Article III.

“The objects of the Association shall be: (1) To promote and diffuse knowledge concerning irrigation and other uses of water throughout Western Canada; (2) To facilitate conference and deliberation among the people of the country concerning irrigation and related interests; and (3) To provide means for bringing the needs of the people and the country before the Provincial and Dominion Governments.”

As regards object (1),—To promote and diffuse knowledge concerning irrigation and other uses of water throughout Western Canada,—looking back at our reports of previous meetings which I have not attended and consulting my recollection of those which I have attended, I find that the great bulk of papers and discussions have come from men who are entirely, if I might use the term, in the business end of the work, that is to say civil engineers, operators and professional agriculturists. It is quite proper and necessary that these men should speak at the Conventions, but we should have more papers and particularly more discussion from the actual irrigators as to what the little difficulties are that they encounter in the field in carrying out the suggestions which are usually given by the class of men above referred to. There is no question about our wanting and welcoming all the professional men at these meetings, but I think that these meetings are pre-eminently the places for the professors and the farmers to swap ideas, and as I have indicated above, the professors, up to date, seem to have had a pretty complete monopoly on all the talks.

As regards object (2),—To facilitate conference and deliberation among the people of the country concerning irrigation and related interests,—here we have it point-blank—To facilitate conference and deliberation among the *people*, and I presume that I might properly substitute the word “farmer” in the place of “people” and still give the true sense that was meant to be expressed in this sentence. Some day I presume the Western Canada Irrigation Association will be the “Mother” organization of many smaller and probably more directly farmers’ organizations, and then all the little questions of details that the farmers are so interested in will be discussed in these smaller organizations and the Conventions of the Western Canada Irrigation Associa-



tion will properly be the place for discussing the bigger questions and things that have been previously boiled down by the other organizations. But at the present time we have not got that far and we have plenty of time at our Conventions to give all the space necessary to the farmers so that we can well afford the time, and I think it is highly desirable that these detail questions should be discussed at our meetings. Then I think, that our publications will be of far greater interest to the farmers, and the greater the interest to the farmer the greater their value.

As regards object (3),—To provide means for bringing the needs of the people and the country before the Provincial and Dominion Governments,—In taking up any question before any organization of this kind it is always necessary to bear in mind two things,—First of all the question has to be thrashed out and a definite decision arrived at as to what is the best way of overcoming the difficulty which is being discussed, and then after that there must be some strong organization who will follow up the resolution, and see that the matter is forcibly brought to the attention of the people who are in a position to take the necessary action. As I have previously indicated, when we have a number of smaller farmers' organizations then the work of the Western Canada Irrigation Association will be to take up the resolutions passed by the smaller meetings, sift them out and if necessary combine them and then provide sufficient weight so that the matters will be given the attention and consideration that is due them.

How are we trying to gain these objects? The answer to this question, in general, is very obvious—By holding meetings such as this one and getting papers and addresses from different persons. But to go into a little closer detail, I would point out that in meetings such as this you will always find some certain questions or set of questions that are uppermost in the papers and discussions. In the earlier days of this organization everybody was primarily interested in getting their irrigation schemes built. Now we have a different stage in our development. The most of the schemes are built and we have come to the more difficult question of practical operation and dealing with the actual problems that arise in the field—that is the farmers' problems.

I think I may safely say that during the past year your Executive have felt that the big problems of the day are farmers' problems, and that for this reason we should get more farmers to attend our meetings and get more talks from the farmers who do attend, and I am quite sure that the main point in arranging for this meeting has been this special endeavour to interest the farmers and get them to attend.

In giving this question the great consideration that it received, two points were uppermost,—First, that the time of the Convention must be made to suit the farmers and that something must be done to make the meeting as interesting as possible. Your Executive has made a very decided change from all previous meetings and held the meeting at this late time in the season thinking that this would make it easier for the farmers to come in, because

it was a time when their thrashing operations would probably be far enough advanced so that they would have time to get away from the farm, and towards developing interests we have got a number of papers which should be of very direct interest to the farmers, and in addition have arranged for the little exhibition of irrigated farm products.

I would like to say here as a member of your Executive, that we have given this matter a great deal of thought and we would welcome the opinion of any of the delegates as to whether the idea particularly regarding the date of the Convention, is a good one or not, so that we may have the benefit of this advice in arranging for the next Alberta meeting.

Now to diverge for a moment and say a few words about other similar organizations and what they are doing: The Cypress Hills Water Users' Association is a young organization and its members, who are practically all farmers, are scattered over a wide territory and are hard to get together, but last winter this organization held a meeting in Maple Creek which resulted in getting a number of excellent papers and some very interesting talks from the farmers themselves. I might also say that this meeting was the means of bringing together with the farmers their Member of the Provincial Parliament and the Minister of Agriculture of their province, and gave them an excellent opportunity of talking over matters of mutual interest with these men.

As a representative of this Association I have attended two meetings of the Oregon Water Users' Association held in Portland, and this Association is to my mind an excellent example of what good can be done by associations of this kind when the proper interest is taken by the members. The hall in which the meetings were held both times, holds I think, about two hundred, and it was always difficult to get a seat, and most of the time there were a good many of the men standing up. The meeting was 90 per cent composed of actual farmers and they were all ready to get up and give their opinions on questions with which they were familiar. The Board of Trade of Portland recognizes the value of a meeting of this kind to their city and places the organization that they have at the disposal of the Association in arranging their entertainment, etc., and on both occasions that I have been present, arranged for a splendid banquet to all the delegates.

And this brings me to a point that I mentioned last winter at Maple Creek before the Cypress Hills Water Users' Association, and that I am going to mention again here. I think if the irrigation farmers would get together more through the medium of this Association, that this would go a long way towards commanding the attention that they deserve from the local boards and other similar organizations. True in Oregon irrigation is better established and some years ahead of us in its development, but there the Portland Board of Trade co-operates most fully with the Irrigators' Association, helps to arrange the meetings, because they feel it is a good thing for the city, and always gives the banquet that I referred to previously, because they feel they owe it to the business men in their city to bring them in touch with the irrigation farmers. They openly say that Portland lives on its surrounding

country, and that Portland is always glad to help the farmers in any way to make an extra dollar, because they are sure that they will always get a part of it in the city.

In Lethbridge also irrigation is better established than it is in this district east of Calgary, but there the President of the Board of Trade has given a great deal of his time during the last two years to studying irrigation problems, and as he is still on the job and going strong I presume that his efforts in this direction are recognized and appreciated by the people of Lethbridge. Calgary some day will boast of being the city that has tributary to it the greatest irrigation projects in America, but to-day they seem to have no interest in the matter, and certainly do not give any help. As regards the Board of Trade of Calgary being interested in irrigation, I may say that since I have lived in Calgary from 1911, I do not recollect ever seeing in any of the newspapers that the Board of Trade was discussing any problem connected with irrigation. The irrigation farmers perhaps are to blame for not jogging their memory in this respect.

The town of Bassano is I think, to be commended because of the great interest that they have taken and the help that they have given in arranging for this successful meeting we are having, and I also have pleasant recollections of going out just before harvest, I think a year ago, on a motor trip through the Bassano colony which was arranged by one of the organizations here, in order to show its members the results of irrigation farming.

I have found this is a hard subject to talk on and perhaps I have not made myself very clear. I trust, however, that you have at least got an idea of what I was driving at, and trust also that you will give some little thought to the points that I have raised. I would say this with great emphasis. Your Executive wants to interest the farmers and particularly to get discussions in these meetings that will interest them. We always try to get speakers who we think will be of the most interest to our farmers here, but as the old adage goes, two heads are better than one, and I am sure that if at any time any of you will send in suggestions to our secretary as to certain speakers that you would like to hear, or suggest certain lines on which to have us arrange for speakers, he will always do his best to carry out your suggestions.

And now to finish, I would like this little talk to do some good and I know that this cannot be unless you understand the spirit in which it is given. I have not meant to criticise the farmers in any way, but rather have tried to point things out as a friend in order to try and help. But anyone who tries to give advice to someone else by criticising is always liable to start trouble, and therefore I realize that while I have perhaps suggested that the farmers are bad talkers, perhaps some of the audience feel inclined to say, "Yes, but you would be a mighty poor farmer." If they did I would say, "Yes, I realize that and want your co-operation—Will you give it?" This is really what I am asking for—fuller co-operation from the farmers. I know that with my fellow engineers and administrators we are often classed as men who can only sit in swivel chairs and think, but if this is true I want to tell you that we do some

tall thinking, and I believe that if the farmers will co-operate with us, our thinking can save their backs many a tired ache. (Applause)

CHAIRMAN: The Secretary has asked me to announce that he desires to have further certificates in order to get the Convention rate.

MR. ABBOTT: I realize very much the position the average farmer is in when he comes from a visit amongst friends and we cannot expect them to get up and say very much on these questions until they have gone into little meetings of their own at home. The first step that a farmer wants to take is to get three or four men together in their own little school house and thresh out there whatever is on their minds, so as to prepare them to go to a larger meeting where there are three or four school houses meeting together and then pick the man to come here. Until our farmers make more organizations and get them started, we will not be able to get them started to face meetings like this.

SENATOR BOSTOCK: There is no doubt that the farmers as a rule do not possibly enter into discussions as much as we would wish them to do. I take exception to what Mr. Peters said that farmers should be readers of papers, because I think the farmer's duty is to his work and to be producing and bring his farm up to the best standard of production. My experience is that if he is doing that he has all the work he can do in the year and would have very very little time to get up papers for meetings like this.

I think we as farmers look to Mr. Peters and gentlemen like him in a professional way to make up these papers and come in contact with the farmers to understand their side of the question. We think Mr. Peters and others in his position have more time on their hands to go into these subjects and prepare these papers and they ought to look to the farmers to carry on the discussion after the papers are read and brought before the meeting.

The last gentleman has said until the farmers get better organization they will not be in a position to take hold of matters as we would wish to see them. I think what we all want to-day is better organization amongst them and a better realization of the fact that by good organizations they are going to accomplish what they desire to do and get better results than they have in the past. I think Mr. Peters is to be congratulated for what he has brought before us.

MR. LAWRENCE: Mr. Chairman, Ladies and Gentlemen,—I would like to assure Mr. Peters that what he spoke of in the conclusion of his speech with regard to anything he might say being taken as a sort of adverse criticism, is not the case and is not received as such by this meeting. Mr. Peters has put in a very practical way and in a very simple way, the objects of this Association and what he has said has been said so kindly, and so nicely, that we appreciate it in every way and shape. I can speak for myself and my fellow delegates in that respect. Not only on this occasion, but on other occasions too, he has treated us in this same spirit and we appreciate it very much.



Mr. Peters stated that the farmers in British Columbia were showing an interest that was quite evident. I am glad to have his statement of that on record and am glad to have it recognized by this Association.

It was also stated that, there should be farmers' organizations who should discuss these subjects before coming to this Convention. In our district that is exactly what we do. We have got several farmers' institutes in the district. We have three agricultural associations. We have a live stock association; we have a water users' community, the first that was formed under the new Water Act of British Columbia. We are holding very frequent meetings and the things that have been brought up at this Convention have been discussed, some of them on several occasions, and we find that instead of hanging back and having difficulty in getting members to the meeting, it is no uncommon sight on our usual Thursday afternoon meeting days, to see eight and sometimes ten rigs with teams to each, coming down the hill, six, eight, ten and twelve miles to attend that meeting. Perhaps it is a water users' meeting in the afternoon and in the forenoon a farmers' institute meeting. Sandwiched in between will be a live stock meeting. We find time for it and the interest in those meetings is very marked and most of us are waiting for the next Thursday in the next month for the next series of meetings. If there are any gentlemen here who find difficulty in getting to work in that fashion, all I can say is if only two of you will agree about it, go to work to get a third and then with determination get four or eight and you can soon have a meeting of from fifteen to thirty farmers full of the subject you want to discuss.

For eleven years I have been working to get an organization in proper form. It is perhaps a long time to wait but we are now getting the benefit of it. Once the result is achieved, I can assure you that it is well worth working for. To come and hear what Mr. Peters has to say as a government official and for him to give us his advice and to show us that the work we are doing like this, gives us the element of government backing, so that we can put these things into effect. That is the object. You may find a great many difficulties and rebuffs, but work for that end and I can assure you that the result is well worth working for.

In regard to schools—I am sure that Mr. Peters will be glad to know that since Professor Elliott at Lethbridge explained what is being done for schools in Alberta, how they were training the boys and the girls, two years have passed now and the experience has been as we have heard at this Convention, very satisfactory. I stated at that Convention if any of the Executive of the Provincial Government of British Columbia had been present, it would have been a bad job for Alberta, because they would have carried Professor Elliott away with them to British Columbia and Alberta would have lost him. Instead of doing that or acting on those lines, the British Columbia Government has instituted a series or course of instruction for teachers first of all, and some two or three hundred teachers assembled this last year in Victoria and have gone through a course of instruction and a very severe examination. I brought an examination paper with me and have handed it to Mr.

Scott and he will no doubt show you how alive the Government is to this educational question. I am sure you will agree with me when you hear that paper read, that it is a pretty severe one, and although there are irrigators in our district who have been practising irrigation for forty years, who could not answer some of the questions on that paper. My daughter went through that course of instruction and I have read the paper and I said afterwards, "Do you mean to tell me you can answer those questions", and she said, "Yes, I have tried to", and I said, "You will soon be teaching your brother to plant potatoes". This is the more striking because the paper is on irrigation and I am glad that Mr. Scott is here to hear this, for it just shows that the Provincial Government of British Columbia is really waking up and showing a reason for its existence by what they are doing on this educational question. I am pleased indeed to say that on this subject they are just as far advanced as the province of Alberta, only while the province of Alberta has appointed experts to teach children in that way, the teachers first of all in British Columbia are being instructed so that they can impart the education to those under them. (Applause)

CHAIRMAN: I will now call upon Mr. William Young, Controller of Water Rights, Department of Lands, British Columbia, who will address us on "The Success of Water Users' Communities in British Columbia." (Applause)

MR. YOUNG: Mr. Chairman, Ladies and Gentlemen,—The remarks I have to make on the Water Users' Community and its success are of a general nature, touching on how legislation came about, some reference to the Statutes and a few words on what measure of success has attended the several communities that have already been organized.

On a former occasion I referred to the changes that from time to time were made in our water laws and which were necessary to permit of effective administration. It is not necessary at this time to again go over the ground other than briefly outline how the Water Users' Community legislation was adopted and the several forms of co-operation.

In speaking of the Water Users' Community legislation of British Columbia, reference must be made to the irrigation corporation. Those of you who are familiar with the proceedings of this Association will remember that the Irrigation Corporation was in a measure the direct outcome of a resolution of the Convention held at Kelowna, B. C., in 1912. The Irrigation Corporation Bill was accordingly prepared for the legislative session of 1913, but did not become law because it was pointed out that there were features that should be re-considered and for which the time was not available. The Bill accordingly stood over until the session of 1914. This not only gave ample time to re-draft it, but an irrigation season in which to administer under such amendments as had been made to the Water Act. The administration of water during that season (1913) revealed many defects, chief of these being the necessity for laws that would make possible the enforcement of beneficial

use and also provisions that would permit of co-operation in various other ways. These defects were remedied in the session of 1914 and so we have our particular laws on irrigation, the water-bailiff and under co-operation, we have the Irrigation Corporation, the Land and Water Company, the Mutual Water Company and the Water Users' Community.

The Irrigation Corporation many of you are already familiar with. The Land and Water Company provision replaces an imperfect law in respect of Irrigation Companies. Under this law it is no longer possible for the land promoters to incorporate first as a land company and then as a water company. They must now in their procedure outline a plan for the organization of a company for the benefit of the prospective purchasers of the subdivided lands to be known as the Settlers' Association and must further set out the proposed form and terms of the water clauses to be incorporated in all contracts for the sale of their lands. The Mutual Water Company provides that owners of land who are water licensees may organize a company with particular powers which will permit of the construction of joint works for conveying purposes. The Water Users' Community simply provides for a partnership of licensees in the construction, maintenance or operation of works and since this is the subject before us, we will accordingly proceed with it.

We look upon "The Water Users' Community" as being of basic importance for the reason that where, as yet in places the settlements comprise but a few farms, it permits of inexpensive but safe organization that later on may develop into one of the larger organizations mentioned. The law has supplied a long felt need that was promptly taken advantage of in several valleys.

The feature that is new about the Water Users' Community is the fact that by following the instructions as set out in the Water Act the members can avoid being individually responsible for all the acts of the Community. It was at one time possible for several licensees to co-operate under the "Partnership Act" as a "limited partnership". In this form of partnership, however, only the liability of the "special partners" is limited, the "general partners" being jointly liable for all debts and obligations of the firm, and severally liable for certain acts. Now even though it was possible by means of this Act and a series of agreements to co-operate with limited liability, it meant a procedure not only expensive and complicated, but most uncertain. No attempts were therefore made to organize until co-partnership was fitted into the Water Act under the title of the "Water Users' Community".

For the information of those who are particularly interested in this legislation, I have here the several sections that outline the procedure, and unless you wish to hear these read, I will refer to the different points.

Section 160 of Part VII of the  
Water Act, B. C., Statutes, 1914.

WATER USERS' COMMUNITY

- |                                |  |
|--------------------------------|--|
| Co-Operative partnership.      | “160. (1) When two or more licensees desire to join together in constructing, maintaining or operating works under this section, and when the lands to which their licenses are appurtenant do not exceed in the aggregate two thousand acres, they may form a partnership under this Act, to be known by the firm name of “The (naming it) Water Users’ Community,” upon subscribing and filing with the Water Recorder of “the district” articles of partnership.  |
| From year to year              | (2) Such community shall, unless otherwise agreed upon, be deemed a yearly partnership renewable from year to year by tacit consent.   |
| Vote by interest               | (3) A partner in any such community, or his agent authorized in writing, shall at any meeting thereof be entitled to vote upon the interest which the partner may hold therein, but the result of the votes shall be determined by the number of interests voted upon and not by the number of partners voting at such meeting.  |
| Interest according to license. | (4) The interest which each partner shall have in such community shall be based on the maximum quantity of water which he has the right to divert under his license.   |
| Majority in interest may act.  | (5) A majority of votes may decide upon the method in which the works shall be constructed and maintained and what repairs or renewals shall be effected, and may levy assessments therefor respectively and for the expenses of such community, and may determine the extent and manner of levying the said assessments and which the same shall be payable. Such majority shall also choose a manager who shall represent such community, who may sue and be sued in the name of such community for assessments and otherwise and he shall have the power to bind such community with his contracts. |
| When assessments payable.      | (6) All such assessments shall be payable before the first day of June in each year.   |
|                                | (7) Any partner making default in payment of any assessment after receiving a notice from the manager certifying the amount due by him shall, if such amount be correct, be personally liable therefor to such community, and may be sued therefor in any Court of competent jurisdiction.   |
| No enlargement of rights.      | (8) No agreement or undertaking pursuant to this section shall enlarge as to quantity the rights of any licensee as fixed by the license.  |



## LIMITED LIABILITY

- Steps necessary to limit liability
- (9) Any such community may limit the liability of its members upon complying with the following requirements, that is to say:  
 Upon filing with the Water Recorder a statement verified by statutory declarations, signed by each of the members of such community, giving the name of the community, the stream or streams from which water is diverted under the several licenses, a description of the license of each member of the apportionment of any license so held, the number and date of such license, and the land or mine to which such license or such apportionment thereof is appurtenant.
- Effect of limited liability.
- (10) After such conditions shall have been complied with, no member of such community shall be liable for any indebtedness incurred thereafter beyond an amount proportioned in his interest in the community.
- Accounts to be kept.
- (11) Every such community shall keep a correct account of its assets and liabilities, together with the names of the partners and the interest held by each, and shall make out a monthly balance-sheet showing the names of creditors and the amounts due to each, and file the same among the papers of the community; and such balance sheet and all the books of the community shall be open to the inspection of creditors at all reasonable hours.
- When membership ceases.
- (12) Any member of such community who transfers or disposes of the land or mine to which his license is appurtenant, or who abandons such license, or whose license is cancelled, and who has served a notice of such transfer, disposal, abandonment, or cancellation, as the case may be, upon the manager of such community, and filed a copy thereof in the office of the Water Recorder of "the district," shall cease to be a member of the community, but he shall in any event be liable for his proportion of any indebtedness of the community which may have been incurred prior to such transfer, disposal, abandonment, or cancellation.
- Liability of member.
- (13) Any creditor of such community, upon obtaining a judgment against such community, may register a certificate of such judgment to the extent of the proportionate liability of such member in the Land Registry Office of "the district" in which the land or mine is situate to which the license of such member is appurtenant.
- Rights of creditor
- (14) No such community shall be liable for any indebtedness than that contracted by its manager, or by its agent duly authorized in writing.
- Liability of community
- (15) Should any such community fail to comply with any of the provisions of this Act relating exclusively to "limited liability"
- Penalty on failure to comply with Act.

communities, such community shall from the date of such failure cease to be a "limited liability community."

Whenever a Water Users' Community is contemplated attention is drawn to the sections in the Water Act in respect of irrigation and the Water Bailiff, as ultimate success largely, if not wholly, depends thereon. In fact, if we have had any measure of success in the administration of irrigation, it is quite as much due to these sections as anything, and although I have referred to them on a former occasion before this Association, it is essential that I refer to them again when speaking of the Water Users' Community. Since it will take up your time to read sections I will refer briefly to the several points.

Section 125 of Part VI of the  
Water Act, B. C. Statutes, 1914.

IRRIGATION.

Quantity  
limited to  
beneficial  
use.

"125. The total quantity of water used under any license for "irrigation purposes" in any season shall be based upon the number of acres of the lands to which the license is appurtenant which are actually and beneficially irrigated, and the quantity used per acre shall be limited to such quantity as experience may from time to time indicate to be necessary for the production of crops in the exercise of good husbandry.

Rotation  
in use.

126. Having due regard to the priority of his right, a licensee under such license shall divert the quantity of water which may be necessary for his purpose, on being so directed by the Engineer, at intervals of time, under such system of rotation with other water-users on the same stream or otherwise, as may best meet the requirements of growing crops and at the same time secure an economical use of water.

Particular  
crop grown  
to be con-  
sidered.

127. Notwithstanding the quantity mentioned in any license; such licensee shall be entitled from time to time to divert only such quantity of water (up to the maximum specified in the license) as may be necessary for the proper requirement of the particular crop grown from time to time upon the lands to which the license is appurtenant, and no more.

WATER BAILIFFS.

Minister  
may  
appoint

128. (1) Where licensees or other persons having the right to divert water from any stream cannot agree as to the distribution of such water or such part thereof to which they are severally entitled, the Minister may, on the recommendation of the Comptroller, appoint one or more Water Bailiffs, for such periods as he may

deem necessary, for such stream, or he may appoint one or more such Bailiffs for several streams or for any definite locality.

Duty and  
Power.

(2) It shall be the duty of any such Water Bailiff, and he shall have the power, within the locality for which he is appointed, from time to time, and in accordance with the instructions of the Engineer, to divide the water of the streams or other sources of supply in the said locality among the works of the several licensees or other persons taking water therefrom, including the distribution of water among the various users of any partnership works according to the rights of each, and so as to prevent waste of water, and to shut and fasten or cause to be shut and fastened, and to regulate or cause to be regulated, the headgates or ditches, the controlling-works or reservoirs, or other diverting works as may be necessary by reason of the said rights.

Notice to  
be affixed.

(3) Whenever in the performance of his duties any Water Bailiff regulates a headgate to a ditch or any controlling works, it shall be his duty to attach to such headgate or controlling-works a written notice, properly dated and signed, setting forth the fact that such headgate or controlling-works has been properly regulated and is wholly under his control, and such notice shall be notice to all parties interested in the division and distribution of the water of such ditch or reservoir.

Appeal

(4) Any person who may be injured by the action of any Water Bailiff shall have the right to appeal to the Engineer, and the procedure of such appeal shall be as is provided for an appeal from an Engineer to the Comptroller.

Compensa-  
tion.

(5) The Water Bailiff shall receive such compensation as the Minister may determine.

By whom  
paid.

(6) Such compensation shall be paid by the licensees and others entitled to divert water from any stream or locality where the services of such Water Bailiff are required in proportion to the quantity of water used respectively by such licensees or persons, or the quantity of water to which such licensees or persons, or the quantity of water to which such licensees or persons are respectively entitled, as the engineer may determine.

Method of  
collecting.

(7) The amount to be so paid by each licensee or person shall be a charge upon the land to which the license is appurtenant, or, where the right to divert water is not held under a license, upon the land upon which the water is used, and may, in addition to all other remedies, be a debt due to the Crown recoverable by action at the suit of the Attorney General or any person authorized by him.

Further  
powers

(8) In the performance of his duties any Water Bailiff shall have all the powers of a police constable under the "Police and Prisons Regulation Act."

Engineer  
may act.

(9) The Engineer shall, if appointed by the Minister for that purpose, perform the duties and have the powers of a Water Bailiff under this Division.

(10) The Water Bailiff shall be under the direct supervision of the Engineer of the water district within which the locality to which he is assigned is situate.

To the Water Users' Community these sections on irrigation are the basis of any system of rotation agreed upon. In perhaps the fewest words possible the very essentials of successful irrigation are brought home to each member. In respect of the section on the Water Bailiff it might be said that the powers conferred on him are too great. It, however, depends entirely on the man who should be selected as having qualifications that particularly fit him for the work.

I have described to you the provisions made in our laws for this form of co-operation. You, no doubt, will be interested to know if it works out as easily as it reads.

A prospective community if left to itself does not readily get together in agreement; different views are presented. The holder of the first record probably has been dragged through several of the courts in the defence of his water right and for a time has faced ruin. Being successful in his defence and having enjoyed some years of peace, he does not propose to be a party to anything that will jeopardize his rights. The holder of one of the later rights takes the stand that he is not always sure of a share of the water and since it is hard enough for him to get along he wants to be certain that in becoming a member of the Water Users' Community he is not taking upon himself a liability that may mean the loss of everything he has. The result is usually a request that the Comptroller attend one of their meetings, when an effort is made to explain the several points provided in the Act and then answer any questions. The first record holder is told that membership in the community will not affect the status of his rights. The holder of the last record has explained to him the limited liability provision. Administration is also carefully explained, reference being made to the laws on irrigation and the duties and powers of Water Bailiff, attention being directed to the fact that the Water Bailiff is under the direct supervision of the District Water Engineer. This is an important feature for should the partners fail to agree on a system of rotation in use of water, the engineer prepares the order and sets the dates.

Another point with the prospective community is whether or not it is necessary to employ a lawyer. Now the majority is usually not in favour of having the lawyer because of the expense and to meet their wishes the department prepared a form which comprises the Articles of Partnership. We have tried to make these articles as simple as possible that those interested may understand them.



## WATER USERS' COMMUNITY

## Articles of Partnership.

We, the undersigned, do hereby certify that we have entered into partnership under section 160 of the "Water Act, 1914", by the name of "The..... Water Users' Community".

The interim manager of the said Water Users' Community is.....  
.....of.....B. C.

A brief description of the system which it is proposed to operate is as follows:.....  
.....  
.....

(If the said system involves any change in the existing works, the Community should apply through its manager to the Comptroller of Water Rights (under section 24 of the Act) for permission to make such change. Forms for this purpose can be secured from any Water Recorder or from the Comptroller.)

The particulars with respect to lands owned, irrigable acreage, license numbers, votes of each partner and other data are given in the appended form, which is incorporated herewith and forms part hereof.

The liability of each member is limited to the amount of his share in the community which is governed by the maximum quantity of water which he is entitled under his license to use such of his lands as are to be supplied with water from the system of this community.

The said partnership was formed by agreement of the undersigned on the.....day of.....191....and the term through which it is to continue is.....years.

.....  
.....  
.....

## STATUTORY DECLARATIONS

I, A. B., do solemnly declare that the signatures of.....  
.....and.....and.....  
.....and.....and.....  
affixed to the above declaration are the genuine signatures of the persons whose they purport to be.

And I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act".

Declared before me at }  
 this day }  
 of 191 }  
 Signature of Declarant.

Title of official.  
 (Justice of the Peace,  
 Commissioner, Government  
 Agent, or as the case may be).....

I, A. D., do solemnly declare, etc. etc. (same form as the above).

NOTE: If it is desired to limit the liability of each partner, the above form after being carefully filled in should be filed in duplicate with the local Water Recorder, who will transmit one copy thereof to the Comptroller.

### FORM

#### PARTICULARS WITH RESPECT TO LAND OWNERS, ETC.

	Name of partners	1
	Post-office addresses of partners.	2
	Name of streams or streams from which water is diverted for lands to be served.	3
	Lots numbers of lands of each partner to be served with water and to which license is appurtenant.	4
	Number of each license or apportionment thereof.	5
	Date of each license or apportionment thereof.	6
	Area (in acres) of each of said lands to be irrigated from community system.	7
	Maximum quantity of water for each of said lands under license.	8
	Votes allowed each member.	9
	FORM	

The first district to take advantage of these provisions was Heffley Creek valley. It did not take the public spirited men of this valley long to come to a decision, in fact they were ready to go ahead before the law became effective

in the railway belt. Here it was realized that only by means of organization and co-operation would contention cease. So far as I know the Heffley Creek Water Users' community has been and is a success. It comprises about 20 farms which together have about 1000 acres under irrigation. As a result of all parties doing their share an excellent reservoir has been developed. The provisions in respect of irrigation and the Water Bailiff have demonstrated that order and reasonable system works to the advantage of every one. Several incidents that have happened show that the problems of conservation of water, alienation of water to another watershed, and the granting of new rights which are of vital interest to the valley are more fully appreciated and the secretary of the community is making it his business to see that these problems are properly considered by keeping in touch with the departmental officers. In the old days these same problems were the business of everyone, yet of no one in particular with the result that no united action was taken.

In another district a community has recently been organized. In this case, it was necessary that an agreement be entered into with two of the prior record-holders for the use of their ditch, for some reason or other the members at one time reasoned that the agreement should be first entered into, then the community formed. Finally they were advised to see a lawyer who confirmed the advice of the department. The difficulty in this instance is the agreement. The record-holders did not fully appreciate their status and the powers of administration under the Act. Under these powers the administrators take the stand that it is not in the public interest to permit construction of parallel ditches, even on Crown land, where one ditch will serve the same purpose. These record-holders have been given to understand clearly that they must fall in line, and that any system of rotation in use of water ordered will be enforced. At the same time they are assured that this will work no hardship since any order of rotation gives first rights their due consideration.

I might add that co-operation under the Water Users' Community is proving of some assistance to the administration. To illustrate this,—a short time ago a land owner in the Heffley Creek valley wrote enquiring if he could secure a water right on Heffley creek. He was advised to confer with the Heffley Water Users' Community. Their answer being favourable, he wrote accordingly, and which we confirmed by writing the secretary of the community. The result was that in due course a right was granted. Had this man applied in the days prior to the organization of the community, I have not the slightest doubt but that there would have been objections from all who already held rights. The applicant and the objectors would have employed lawyers. It would also have meant considerable investigation by the department before any decision could have been arrived at. All the expense, litigation and delay that these proceedings would mean are put to one side by the community itself in one brief letter to the comptroller. There is just this to say in conclusion, that if the Water Users' Community plan of co-operation is proving a benefit to those who have taken advantage of it, it is likewise

proving of assistance to the water administration of British Columbia in satisfactorily disposing in some cases of what have been 'contentious districts. (Applause)

MR. JOHNSTONE: Mr. Chairman, I would like to take up half a minute to express my pleasure of Mr. Young's work on behalf of irrigation in our district in British Columbia. (Applause)

MR. FAIRFIELD: The Committee on Credentials begs to report that there have been a total of 199 registered delegates. Of these there are 76 accredited delegates. We are quite sure that there were numbers that came here without credentials, but were entitled to them, but nevertheless they had to be guided by those who brought their credentials with them.

The names of the accredited and registered delegates are:

LIST OF DELEGATES ATTENDING WESTERN CANADA IRRIGATION  
CONVENTION, NOVEMBER 23RD, 24TH AND 25TH, 1915.  
BASSANO.

W. R. Abbott, Maple Creek, Sask.  
Chas. Allen, Strathmore, Alberta.  
Alfred Andersen, Carseland, Alberta.  
C. H. Attwood, Dominion Water Service Branch, Ottawa, Ontario.  
Don H. Bark, Canadian Pacific Railway, Strathmore, Alberta.  
J. L. Brown, Kamloops, B.C.  
Senator Bostock, Kamloops, B.C.  
L. C. Bond, Bassano, Alberta.  
H. O. Budin, Bassano, Alberta.  
F. H. Berry, Bassano, Alberta.  
Oliver Blue, Department of Agriculture, Edmonton, Alberta.  
Wm. Bailey, Irrigation Branch, Dept. of the Interior, Ottawa, Ontario.  
R. E. Bird, Bassano, Alberta.  
David T. Bennett, Bassano, Alberta.  
J. H. Brewer, Crowfoot, Alberta.  
Lieut.-Gov. Brett, Edmonton, Alberta.  
J. C. Buckley, Gleichen, Alberta.  
P. Belisee, Bassano, Alberta.  
F. K. Beach, Calgary, Alberta.  
D. Braniff, Bear Creek, Alberta.  
J. S. Barker, 82nd Battalion, Calgary, Alberta.  
W. S. Brook, Bassano, Alberta.  
W. A. Burton, Medicine Hat, Alberta.  
A. T. Connolly, Bassano, Alberta.  
H. C. P. Cresswell, Department of Natural Resources, Canadian Pacific  
Railway, Calgary, Alberta.



- H. S. Cross, Bassano, Alberta.  
J. Cormack, Strathmore, Alberta.  
R. W. Comer, Gem, Alberta.  
A. J. Culbertson, Bassano, Alberta.  
H. A. Craig, Edmonton, Alberta.  
J. Campbell, Calgary, Alberta.  
Chas. A. Clark, Bassano, Alberta.  
E. G. Calkins, Gleichen, Alberta.  
F. W. Carpenter, Bassano, Alberta.  
A. S. Dawson, Canadian Pacific Railway, Calgary, Alberta.  
S. S. Dunham, Lethbridge, Alberta.  
O. Daehler, Bassano, Alberta.  
Capt. J. Domaille, Department of Agriculture, Regina, Saskatchewan.  
J. E. Degnan, Calgary, Alberta.  
Jas. C. Dobson, Kamloops, B.C.  
J. S. Dennis, Canadian Pacific Railway, Calgary, Alberta.  
C. L. Dodge, Strathmore, Alberta.  
Jos. Dixon, Maple Creek, Saskatchewan.  
Jas. Dougall, Winnipeg, Manitoba.  
J. F. L. deRouville, Calgary, Alberta.  
W. A. Dilley, Calgary, Alberta.  
A. G. Denbigh, Medicine Hat, Alberta.  
Max Enos, Montreal, P.Q.  
C. C. Elliott, Brooks, Alberta.  
R. P. Findley, Bassano, Alberta.  
A. L. Freyberger, Gem, Alberta.  
H. W. Ford, Bassano, Alberta.  
R. V. Ferguson, Gem, Alberta.  
F. H. Fairfield, Lethbridge, Alberta.  
G. A. Forester, Nateby, Alberta.  
B. D. Fessenden, Strathmore, Alberta.  
L. Fletcher, Calgary, Alberta.  
Mr. Fryer, Seed Office, Department of Interior, Calgary, Alberta.  
W. L. Gilbert, Carseland, Alberta.  
C. H. Giffin, Strathmore, Alberta.  
Marjory M. Goldie, Olds Agricultural College, Olds, Alberta.  
A. George, Bassano, Alberta.  
J. Grant, Standard, Alberta.  
E. Gray, Bassano, Alberta.  
Emiel Griesbach, Bassano, Alberta.  
Simeon Hansen, Southern Alberta Land Company, Ronalane, Alberta.  
S. N. Houston, Canadian Society of Civil Engineers, Calgary, Alberta.  
H. Hamilton, Bassano, Alberta.  
G. H. Hutton, Superintendent Experimental Farm, Lacombe, Alberta.  
Dean E. A. Howes, University of Alberta, Edmonton, Alberta.

- W. Hatcher, Langdon, Alberta.  
W. J. Hopkins, Strathmore, Alberta.  
D. W. Hays, Medicine Hat, Alberta.  
W. F. Hicks, A. R. & I. Co., Lethbridge, Alberta.  
J. E. Hellowell, Gleichen, Alberta.  
W. Huckvale, Medicine Hat, Alberta.  
Wm. Hoople, Canadian Development Co., Calgary, Alberta.  
G. El Hyde, Cluny Nurseries, Cluny, Alberta.  
R. N. Hayden, Calgary, Alberta.  
M. C. Hendry, B. A., Manitoba Hydrographic Survey, Winnipeg, Manitoba.  
E. M. Hall, Bassano, Alberta.  
H. H. Honens, Calgary, Alberta.  
R. H. Hanna, 82nd Battalion, Calgary, Alberta.  
J. F. Irwin, Lethbridge, Alberta.  
T. H. Irvine, Gleichen, Alberta.  
J. Ironside, Calgary, Alberta.  
E. R. Jones, Brooks, Alberta.  
P. J. Jennings, Canadian Society, Civil Engineers, Calgary, Alberta.  
James Johnstone, Nelson, B.C.  
Ald. D. B. Johnstone, Kamloops, B.C.  
B. J. Kleat, Bassano, Alberta.  
G. O. Kerr, Lethbridge, Alberta.  
L. J. Kemp, Hutton, Alberta.  
M. E. Lazeret, Bassano, Alberta.  
C. E. Lawrence, Kamloops, B.C.  
Hans Lausen, Carseland, Alberta.  
George Lane, Calgary, Alberta.  
E. Lyster, Gem, Alberta.  
H. A. Locke, Gem, Alberta.  
Chas. F. Langer, Winnington, Alberta.  
J. D. Laughlin, Gem, Alberta.  
M. R. F. Lloyd, Lethbridge, Alberta.  
Hugh McKellar, Moosejaw, Saskatchewan.  
W. D. McKay, Alderson, Alberta.  
E. M. McCameron, 516, 22nd Ave., W., Calgary, Alberta.  
E. McKee, Bassano, Alberta.  
W. McMullan, Nightingale, Alberta.  
E. H. McCaughtery, Bassano, Alberta.  
N. W. N. McMillan, Gleichen, Alberta.  
D. McBean, Gleichen, Alberta.  
F. D. McNaughton, Brooks, Alberta.  
W. B. McLean, Lethbridge, Alberta.  
A. A. McGregor, Bassano, Alberta.  
Allen McGregor, Southern Alberta Land Company, Ronalane, Alberta.

- J. N. K. McAllister, Canadian Pacific Railway, Calgary, Alberta.  
Miss M. Murchison, Bassano, Alberta.  
A. P. Miller, Gem, Alberta.  
Hon. Duncan Marshall, Minister of Agriculture, Olds, Alberta.  
W. Mathews, Lethbridge, Alberta.  
J. S. Mavor, Bassano, Alberta.  
B. C. Milne, Lacombe, Alberta.  
M. Macklenburg, Calgary, Alberta.  
A. R. Maurer, Hussar, Alberta.  
H. B. Muckleston, A. R. & I. Co., Calgary, Alberta.  
L. A. Moore, Gleichen, Alberta.  
G. A. Morrison, Calgary, Alberta.  
G. R. Marnoch, Lethbridge, Alberta.  
J. C. Nelsen, Carseland, Alberta.  
Chas. Orleans, Gem, Alberta.  
J. B. Oldfield, Lethbridge, Alberta.  
A. K. Olive, Calgary, Alberta.  
F. H. Peters, Commissioner of Irrigation, Department of the Interior,  
Calgary, Alberta.  
Sam G. Porter, Irrigation Branch, Department of the Interior, Calgary,  
Alberta.  
E. G. Padden, Bassano, Alberta.  
C. O. F. Palmer, P.O. Box 129, Bassano, Alberta.  
E. F. Purcell, Bassano, Alberta.  
G. M. Pierce, Bassano, Alberta.  
G. H. Patrick, Strathmore, Alberta.  
Arthur Perrey, Cardston, Alberta.  
Chas. Park, Pandora, Alberta.  
H. W. Pattin, Bassano, Alberta.  
C. W. M. Peterson, Farm & Ranch Review, Calgary, Alberta.  
R. B. Robson, Crowfoot, Alberta.  
Axel C. D. Roth, Bassano, Alberta.  
R. P. Robinson, Crowfoot, Alberta.  
J. P. Royer, Gem, Alberta.  
R. E. Robson, Gem, Alberta.  
Edmund N. Ridley, Strathmore, Alberta.  
Chas. Raley, Lethbridge, Alberta.  
C. Rodbourn, Crowfoot, Alberta.  
F. W. Rumble, Gem, Alberta.  
J. W. Renton, Canadian Development Company, Calgary, Alberta.  
S. P. Summerville, Amethyst, Alberta.  
A. L. Sifton, Premier of Alberta, Edmonton, Alberta.  
W. E. Scott, Deputy Minister of Agriculture, Department of the Interior,  
Victoria, B.C.  
F. Maurice Smith, Penticton, B.C.

- R. B. Stevens, Langdon, Alberta.  
P. W. Stone, Bassano, Alberta.  
Jas. Speakman, Calgary, Alberta.  
W. H. Snelson, Irrigation Branch, Department of the Interior, Calgary, Alberta.  
Robert Sharp, Suffield, Alberta.  
B. S. Smith, Canadian Pacific Railway, Calgary, Alberta.  
J. H. Salmons, Gleichen, Alberta.  
W. S. Siler, Bassano, Alberta.  
W. Slocam, Brooks, Alberta.  
A. E. Spurgeon, Namaka, Alberta.  
Robert J. C. Stead, Canadian Pacific Railway, Calgary, Alberta.  
R. S. Stockton, Canadian Pacific Railway, Strathmore, Alberta.  
T. Schulte, Strathmore, Alberta.  
C. W. Stokes, Canadian Pacific Railway, Calgary, Alberta.  
J. W. Shoop, Bassano, Alberta.  
F. G. Sanderson, 82nd Battalion, Calgary, Alberta.  
T. M. Tweedie, Calgary, Alberta.  
Geo. Travis, Bassano, Alberta.  
W. D. Trego, Gleichen, Alberta.  
C. T. Thonet, Strathmore, Alberta.  
R. A. Travis, Bassano, Alberta.  
John Thompson, Strathmore, Alberta.  
T. H. Tiney, Medicine Hat, Alberta.  
F. Unsworth, Maple Creek, Sask.  
J. A. Valiquette, President Board of Trade, Calgary, Alberta.  
G. D. Walters, Irrigation Branch, Department of Interior, Calgary, Alberta.  
W. B. Whitcanack, Keoma, Alberta.  
W. C. Wright, Wall Hollow, N.D.  
C. A. Wayne, Bassano, Alberta.  
Lewis Welsford, Suffield, Alberta.  
G. S. Warren, Ouelletteville, Alberta.  
R. S. Walters, Hutton, Alberta.  
J. H. Wright, Gleichen, Alberta.  
J. Wright, Bassano, Alberta.  
Robert West, Strathmore, Alberta.  
W. J. Yeo, Bassano, Alberta.  
Wm. McGie Young, Canadian Society of Civil Engineers, Victoria, B.C.



CHAIRMAN: Mr. Don H. Bark will now address the Convention on,—

“PRACTICAL IRRIGATION HINTS FOR ALBERTA”.

MR. BARK: No two crops require the same amount of moisture for their best growth of maximum production. Neither do they require their moisture at the same season of the year. Grains require the least water of any crop we raise, and alfalfa and pasture grasses require the most water, while the requirement of potatoes falls somewhere between that of the grains and alfalfa. Assuming the foregoing to be true, even one who has never farmed can readily see that the maximum yields of a variety of crops upon the same farm the same year are impossible without irrigation. The irrigation farmer is therefore confronted by many more intricate problems than his neighbour, who secures or attempts to secure his moisture from precipitation. He must not only understand how to prepare the land and plant and harvest his crops in the best possible manner, but must understand in addition how to prepare land for irrigation, and when and how to irrigate all of the various crops in the best possible manner.

All of this may sound somewhat difficult to the uninitiated, but when one realizes that not only every business man but every farmer as well must be a student these days if he wishes to succeed, he will find that it is surprising how soon any farmer can pick up enough irrigation knowledge to make a success on an irrigated farm, provided he has good soil and an ample supply of water at his command.

Irrigation of course necessitates an extra amount of time and trouble, but there can be no doubt that the irrigation farmer's profits are more than sufficient to offset the extra amount of time and expense involved, for but few successful irrigators are ever again content to farm under humid conditions. The irrigation farmer, however, must never cease to study his problems, and I sincerely trust that in discussing the subject of “Practical Irrigation Hints for Alberta” my ten years' service in irrigation work with the United States Department of Agriculture will be of some help to the irrigators of this section.

In taking up this subject I wish to discuss it from the standpoint of the farmer irrigator, and while the space allotted to this paper is far too brief to make a general discussion of irrigation, I hope to at least touch upon all the more important phases of the problem, and will start with a farm consisting of virgin prairie, in which condition most of you either have started or will start.

GENERAL SURVEY OF THE FARM.

By all means the first thing to do with an irrigated farm, even before it is ploughed, is to go over it carefully and decide just how the water will run, and where the ditches should be made on each field, for the contour of the land will largely determine, not only the size and shape, but the location of each field as well. A general plan of how the entire farm will look after it is all

laid out and planted should be formulated at least in one's mind, if not on paper, before the first crop is planted, else there will finally be as much or more lack of system to it than to some of the houses that we frequently see, with half a dozen or more additions.

One should plan the farm and lay out the field so that there will be a drain ditch as well as a head ditch for each field, for it is fully as important to get the excess water off as it is to get the irrigation water on. Wherever possible each field should be planted so that it can be irrigated through a ditch of its own, though of course it is not objectionable in the case of a large field to be compelled to bring water to it through two or more small laterals. Do not, however, for the sake of square or rectangular fields, plant say a narrow strip of grain or alfalfa on the lower side of the ditch, and then fill out the remainder of the field with some other crop, thus making it necessary to irrigate both crops simultaneously from the one ditch. Plan to have the field ditches, the location of which are more or less determined by the topography, the dividing line between the different crops or different fields of the same crop.

#### LAYING OUT DITCHES.

Do not run ditches by guess. Many have been so laid out and constructed, but as water will not run up hill, it is best to have them laid out properly with an instrument, for the rolling topography of this country is very deceptive. It is not necessary to hire any one to do this—if you are located on either the Eastern or Western Section of the C. P. R. Irrigation Block, the Company will be glad to furnish a man to do this for you, and if you are not so located you can run your own ditches. A cheap and efficient instrument with a good clear telescope, good enough to use in connection with any ordinary farm irrigation problem can be purchased complete anywhere in the States for \$16., and should not cost more than \$20 here. I have levelled many a field and ran many a farm lateral with a pair of \$1.25 sights attached to an ordinary carpenter's level, using a red rag tied around the handle of an ordinary hoe or garden rake for a levelling rod and target.

#### GRADE OF FARM DITCHES.

The topography may in many cases determine the grade of the ditch, but wherever possible the ditches that are to be irrigated out of should have a comparatively flat slope, such as from one-tenth to three-tenths foot fall per hundred feet, two-tenths foot per hundred being about right. The ditches should be laid out and staked out, but not built before any surface levelling is done, for the amount of levelling found necessary will be determined by the location of the ditch with respect to the surface of the land to be irrigated from it.

#### SELECTION OF IRRIGATION SYSTEM.

The next step in the preliminary work of laying out and preparing the farm is the selection of the type of irrigation system that is to be used, for the

amount and method of levelling will be largely determined by the kind of system. There are three types of surface irrigation that are adapted to this locality, namely (1) free flooding, (2) the furrow or corrugation system, and (3) flooding between borders, and as above indicated, it will be necessary to decide which one is to be used before the levelling is started.

For the information of those who are unfamiliar with the different types of irrigation, I will endeavour to describe each system briefly.

#### FREE FLOODING.

Free flooding is probably the earliest system of irrigation that was practised in the West. It is as well the most crude system. It is, however, practically the only system I have yet seen in use in Alberta. It consists of running more or less parallel contour ditches across a field from fifty to two hundred feet apart, each ditch being given just sufficient grade so that the water will flow nicely, probably one-tenth or two-tenths fall for each hundred feet. The ground is then levelled between the ditches with a rectangular leveller, the larger knolls first being taken off with a Fresno or other similar scraper. The ground



Levelling Land for Irrigation by means of a "Float."

can really be levelled to better advantage before the ditches are constructed, though as has been above stated, a knowledge of the location of each ditch will help considerably and minimize the work of levelling. It is a good plan to lay out and definitely locate each ditch with a plough furrow before beginning any levelling. The ditches can then be permanently constructed after the levelling is completed, the original location of the ditches being traced by the plough furrows. The irrigation with this type of system is done by starting at

the top of the field and placing sod, brush or canvas checks in the contour ditches at frequent intervals, allowing the water to flow out through openings made in the ditch bank, the irrigator spreading the water as evenly as possible between the ditch being used and the one next below it, which if the slope is uniform, acts as a waste ditch for the strip above and a head ditch for the strip below. As has been stated, this is probably the cheapest, crudest, and least efficient of any of the irrigation systems that are now being used in the West, for there are less provisions made to control the water than with the other more efficient systems, yet with careful levelling and careful attention to the application of the water very good results can be secured by the use of this system.

#### FURROW OR CORRUGATION SYSTEM.

This system of irrigation is in quite general use in a large number of the irrigated districts of Washington, Idaho and Utah, where it is used for practically all kinds of crops, including alfalfa. It also is used quite generally in practically all localities for all rowed or cultivated crops. The land is prepared for this system of irrigation in practically the same manner for the free flooding, though a little more even application can be secured from it than with the free flooding system with the same amount of preparation. The furrows are usually run down the greatest slope unless it is excessive, in which case they angle down the slope on a lesser grade. The furrows are made from two to three feet apart, the spacing depending upon the nature of the soil, the closer spacing being used with the heavier soils, and as they normally run down the steepest slope they usually lie more or less at right angles to the contour ditches, which feed them. These furrows are made with tools constructed especially for the purpose, which more or less resemble the front runners of a bob sleigh, the furrows normally being made in the soft ground, immediately after the wheat, oats or alfalfa is planted. If the furrows are made at this time before the seeds are sprouted, the crop will come up and grow in the furrows about as well as it does between them. The water is applied with this system by turning a very small amount into each furrow and allowing it to run until the water has subbed across, and met midway between the furrows, which is usually from 6 to 18 hours depending on the porosity of the soil. This system has the advantage over the free flooding system in that the furrows can be made to carry water across slight depressions and knolls, and at the same time secure a more even application of the water than can be secured with the flooding system. Advocates of this system also claim that the soil does not bake so much after irrigation, as there has been no water applied directly to the surface except in the bottom of the furrows. The ordinary irrigator can probably irrigate about 20 per cent more land in a day with the free flooding system than with the furrow system, but with the small farm there is little doubt that the freedom from baking and the more even application more than offset the extra time required. Considering the size of our farming operations here, however, the extra amount of time required would be quite a



factor, and it is hardly advisable to plan on using the furrow system here, for either grain, alfalfa or pasture, but it will have to be used for all cultivated crops, such as corn, potatoes, small fruits or garden.



The Furrow System of Irrigation.

#### FLOODING BETWEEN BORDERS.

This system is probably the best system of irrigation for practically all classes of soil in this part of Alberta, and irrigators of this section cannot be too strongly urged to instal it. It is but little more expensive to instal, than the free flooding system, if it is laid out by one who understands it, and can take advantage of the natural topography of the farm. With a few repairs on the dykes, it is good for practically all time, when once installed. One can also irrigate more land in a day with it than any other system, and at the same time secure a more even application of the water. This system consists essentially of flooding the water down the greatest slope, unless it is excessive, between more or less parallel border dykes 30 to 50 feet apart, and from 200 to 400 feet long between cross ditches. These dykes are usually laid out so as to run down the greatest slope. The head ditches cross the dykes and the intervening border strips more or less at right angles, and are laid out and constructed much the same as with either the furrow or free flooding system. To be ideally prepared for this system of irrigation the side fall should be taken out between the borders; in other words each strip should be perfectly flat cross-ways. This, however, is rarely done in practice, but the nearer it is approached the more easily the land will be irrigated. If the borders are properly levelled between the dykes the irrigation is very easy, for when the water is turned into the upper end of each border, a sheet of uniform

depth will advance slowly down the slope between the border dykes, thus wetting each spot uniformly. The irrigator with a little practice and knowledge of the lay of the land will soon become acquainted with the performance of the water on each strip, so that he can tell just how far to allow the water to advance before turning it off and diverting it into the upper end of the next strip. In practice just sufficient water should be turned into each strip so that it will advance to the lower end and without waste. These border dykes are made rather broad and low, and should not be over 4 to 6 inches high in the centre and approximately 3 feet wide at the base, when finished and finally settled down, so broad and low in other words that the haying machinery and wagons can work across them to advantage. The dykes are either constructed with the scrapers which are used for levelling down the higher knolls on the land or can be made by ploughing a back furrow of the location of each dyke, after which each back furrow should be gone over with a ridger, pulling the same lengthways of the back furrow. This ridger is constructed of two 2x12 planks, some 18 feet long, the planks being placed on edge about 12 feet apart in front and 3 feet apart behind. They are thoroughly braced in this position and are pulled lengthways of the back furrow with two horses, the wide spread of the planks in front drawing considerable dirt from each side to the back furrow in the middle, thus filling the furrow on each side and making a substantial ridge. This ridge is afterwards rounded down by harrowing very gently. When seeding, the tops of the ridges or border dykes are seeded at the same time and at the same rate as the remainder of the field, and without climate, practically the same amount of crop will be raised on top of the dykes as between them. This type of system is adapted to almost any field crop, any type of soil, and almost any topography, unless the slope is excessive, and it is believed that if it is once installed, even on a small tract, on a few of our farms, the farmers will find irrigation so easy that they will hasten to prepare as much as possible of the remainder of their farms in this same manner.

#### LEVELLING.

Levelling should be well done, for whatever is spent or done along this line never has to be done over again. The bother of trying to get water on some little knoll, together with the decreased yield on this knoll because of insufficient moisture will usually cause enough loss in one year to more than offset the original cost of having removed the knoll with a team and scraper at the outset. Some fields will of course require more levelling than others; a safe rule to go by is to so level each field that the water will flow uninterruptedly without pooling up from every cross ditch to the next one below. I shall not dwell much on the levelling of land, for it is a simple operation that almost anyone can soon learn, the principal requisite being a goodly amount of time, patience, and stick-to-it-iveness. The principal tools to use are the Fresno scraper for the larger knolls and the rectangular float leveller for

the smaller knolls. I wish to emphasize, however, that every irrigated field should be thoroughly levelled with a rectangular plank leveller every time a crop is planted on it even though it is every spring, and that whatever time or money is spent in levelling will pay larger returns than the expenditure of any other like amount on the farm.

#### CONSTRUCTION OF DITCHES.

The construction of farm ditches is indeed simpler than most of the uninitiated can readily believe. Our soil here is so free from rocks that practically the only work of constructing the ditch, after it is laid out on the proper grade, is to plough from two to six plough furrows on the desired location, and then run an ordinary A-ditcher or crowder through the ditch, placing the most of the dirt on the down-hill side. Two men and a team will easily



Constructing an Irrigation Ditch.

make as much as two miles or more per day of ordinary distribution ditch on the farm. One man and two horses with an ordinary double mould board or lister plough can make the smaller ditches at one operation, thus making eight or ten miles per day, while the larger ditches up to four second-foot capacity are now made with the same but larger type of plough, from four to eight horses being required. Ditches should be made good and strong. Do not be afraid to make the banks of important ditches like the one supplying the entire field too high or too strong, for as soon as they are wet the dirt will settle and the extra strength may be necessary. It certainly does not pay when the need of irrigation water is urgent, and one is trying to irrigate his

alfalfa or pasture, to be compelled to go up above and spend a day or two enlarging and strengthening the ditch, which conducts the water onto the farm or tract in question. Careful irrigators usually clean out and repair their ditches every spring.

Whenever it is necessary to cross a hollow with a ditch either a dyke flume or inverted siphon will be found necessary. Where the hollow is not over one hundred feet across and two or three feet deep, I should advise an earth fill or dyke. If the same be properly and substantially made and the gophers are kept out of it, it will last for years, with but a small amount of repairs, particularly if enough care is taken to seed the side slopes and banks of the dykes with a little blue grass and white clover. Care should be used when building dykes to make them sufficiently high and strong as to allow for settlement after the water is turned in.

With deeper hollows or draws, particularly where the span is not great, either timber or metal flumes should be installed. Attention should be given that the proper grade and capacity be secured, and also that the foundation and super-structure is solid. Inverted pipe siphon for farm use would hardly be recommended in this climate.

#### DIVERSIFICATION OF CROPS.

A well conducted profitable farm not only in Alberta, but anywhere else, should have the crops and products well diversified. It is never a good plan to put one's eggs all in one basket. There is too much of this being done here now. Too much grain, and not enough of other things. If we should happen to have a poor year for grain, with inferior prices, the farmer with only eighty acres or a quarter-section of grain could hardly make a living and meet his payments, while if he had a part of his farm devoted to alfalfa and pasture grasses, with a few cows, pigs, chickens, etc., with also some surplus horses to sell each year, the fertility of the land would not only be maintained, but a poor year of any one crop would not materially affect him, no matter what the season or how bad the market, for he would always be sure of making his living with enough to spare to meet his obligations. The crops of any well conducted irrigated farm in this section should include at least garden, potatoes, alfalfa, clover and pasture grasses, as well as grain.

#### PLANTING CROPS.

Space will not permit much to be said in regard to the planting of the crops on an irrigated farm. I wish, however, to state that irrigation farming can withstand and requires thicker planting than dry farming. The usual custom throughout the Northwest is to plant about 15 pounds of alfalfa seed per acre, 12 pounds of red clover, 100 to 110 pounds of wheat seeded in the spring, 90 pounds of oats and 800 to 1,000 pounds of potatoes. I wish to emphasize the necessity of careful preparation of the seed bed. Grain crops should be planted with a drill at least 2 inches deep, thus placing the seeds



in moist ground, which can be done to much better advantage than by the broadcasting method. If crops are planted in rough, cloddy ground the germination is bound to be poor, and an uneven stand will be the result. Careful preparation therefore pays good returns; an extra harrowing or disking before planting the crop has sometimes been known to double the yield. A fine uniform seed bed is particularly necessary when crops with small seeds, such as alfalfa or clover are planted. Neither alfalfa nor clover will stand such deep planting as will the larger seeds of the grains. From one inch to one and one-half inches is as deep as alfalfa or clover should be planted.

#### IRRIGATION OF CROPS.

There is so much to say in regard to the irrigation of crops, even after they are properly planted on properly prepared land, that I can hardly touch the high spots. Enough could be said about the stage of growth alone at which crops require different amounts of moisture to more than utilize my time.

The average irrigation farmer of Alberta would probably not be interested in all of the details of the latest experiments along this line, so I shall endeavour to call your attention to but a few of the fundamentals, and if there are any who wish to go deeper into the subject I shall be glad to do that at some later date.

Grain has been found to require the most soil moisture during the heading, flowering and soft dough stages. The soil can safely be allowed to begin to dry out as the grain is approaching hard dough, as there is then sufficient strength in the straw to fill and mature the grain. At other stages of its growth grain simply needs only sufficient moisture to keep it growing rapidly.

Alfalfa should be planted on well drained land and requires a continuous supply of moisture throughout the season, from the time the ground warms up in the spring until just before the last crop is harvested. The number of irrigations required during the season to obtain this soil moisture condition will be largely dependent upon the season, and will vary in this locality from one to three. As the ground is quite cool early in the spring it would probably not be advisable to irrigate alfalfa very early, say during April of normal years, nor as late in the fall as October, unless the fall were very dry. Alfalfa though it will not do well on wet, soggy soil, requires fully twice as much water during the year as grain. This is due to the rapidity of its growth and the immense amount of evaporation and transpiration that takes place from the large amount of leaf surface that is exposed throughout the season. My experiments while with the United States Government showed that where a maximum crop of grain requires one acre-foot of water during the season, fully two acre-feet per acre are required for a maximum crop of alfalfa. Alfalfa, however, should not be allowed to go into winter quarters with the soil in a wet and soggy condition. The freezing and thawing which takes place with the soil in this condition is liable to cause winter killing.

The question when to irrigate is best answered by saying, whenever the percentage of soil moisture is low enough so that the crop requires it. There can be no hard and fast rule laid down as to when to irrigate one's crop, be-

cause as much depends upon the soil and the crop itself as upon the climate. One should know at what stage of growth a crop needs the most soil moisture and then watch the condition of one's soil. Whenever the soil from 6 inches to 1 foot in depth in close proximity to the roots of the plant becomes so dry that when squeezed together in the hand and released it falls apart through lack of sufficient moisture to give it sufficient cohesion, then irrigation is required. The old experienced irrigator can also tell when crops need irrigation by the colour of the crops themselves. A dark, blackish green colour indicates that they are needing water, while a light pea green colour indicates that sufficient water is available for the time being. This difference in colour is particularly noticeable with alfalfa and potatoes.

Potatoes require a medium but uniform moisture content in the soil throughout the season. They should never be allowed to dry out and suffer for lack of moisture, particularly after the young tubers begin to form. Potatoes, the same as alfalfa, are a crop that will not do well in wet, soggy soil—



Irrigating Grain.

yet they require considerable irrigation water in order to produce a maximum yield. They should preferably be hilled up pretty well and irrigated with a small stream in a rather deep furrow between the rows, thus allowing the moisture to reach the soil around the tubers in the hills by capillary attraction, which will not allow of over-saturation of the soil.

In actual practice the new irrigator is always inclined to use too much water, thinking that if a little irrigation is good, more is better. This, however, is a mistake, for too much irrigation is sometimes worse than none at all. Irrigation might be likened in its effect upon the soil and crops to a tonic with the human system—when given in proper doses. The proper amount

given or applied when necessary and at the right time produces wonderful results, but a double or triple dose usually overdoes the matter and gives poorer returns than if none at all had been used.

Some do not believe that we need irrigation in this part of Alberta, but there are so many fundamental arguments that show conclusively that irrigation is not only desirable, but absolutely necessary nine years out of ten, if maximum crops are to be produced, that it is hard to believe otherwise. Our soils here contain a certain small amount of alkali, as do all arid and semi-arid soils, and the very presence of this alkali proves conclusively that there is insufficient rainfall here to produce a good crop every year, else this alkali would have been leached out long ago. The absence of trees on the prairies is another almost positive indication that there is insufficient rain here to produce good crops every year, for trees can actually be grown with less water than almost any other of the staple crops. It is therefore apparent that there would be many more trees on our prairies if the normal precipitation were sufficient for the production of good crops every year.



Wheat—A Good Crop.

The bumper crops that have been produced during the past season *without* irrigation is in fact, however, one of the most positive proofs of the need of supplementary moisture (irrigation) during eight or nine years out of every ten, or during all but the very wettest of seasons. Thrashing is now well advanced, and it is a well known fact that taking it far and wide more high yields have been reported over a very wide scope of territory than have ever been produced before. Aside from the precipitation, the climatic conditions have not been unusual in any way during the season, yet the precipitation dur-

ing the five growing months has ranged from 150 per cent of normal to as high as 300 and more per cent, of the amount received during the same period in the drier years. These large yields have therefore absolutely demonstrated not only what our soil is capable of producing, but have also proved beyond all doubt that our crops need supplementary moisture (irrigation) in addition to the normal precipitation eight or nine years out of every ten, in order to continually produce year after year the maximum of which our soil is capable.

The last, or 1910, census of the United States, gives some particularly conclusive figures showing the difference in yields and values of the different crops between the entire irrigated area and the entire non-irrigated area of the United States. These figures are averages, and cover many different climatic conditions, but as they also cover an extremely large area, far more than the entire cultivated area of Canada, they are very dependable, and should show at least a fair comparison of the increase that can be made in the yield here by means of irrigation. The following figures are copied direct from page 856 of the printed report of the United States Irrigation Census of 1910, and show quite clearly how much the yields of the staple crops in the United States are increased by means of irrigation:

Crop	Average yield per acre		Increased yield on irrig. land per cent	Increased			
	On Irrigated	On Unirrigated		Av. val. per acre		Val. per	
	land arid	land entire		On Ir.	On Unir.	acre	
	region	United States		land	land	Amt. per cent	
Alfalfa.....	2.94 T.	2.14 T.	37.4	\$22.94	\$10.97	5.97	35.2
Oats.....	36.8	28.5	29.1	19.00	11.64	7.36	63.2
Wheat.....	25.6	15.3	67.3	23.40	14.75	8.65	58.6
Barley.....	29.1	22.3	30.5	18.32	11.81	6.51	55.1
Timothy.....	1.73 T.	1.22 T.	41.8	15.84	12.75	3.08	24.1

In conclusion I wish to emphasize the major points that have been included in this paper, principal among which are:

(1) Be sure that the farm is properly laid out before any levelling or ditching is started, for the ultimate success of the farm frequently depends upon the adaptability of the initial plans.

(2) Run all the ditches on the proper grades with some kind of an efficient instrument. The proper grade for an internal farm ditch is approximately .2 foot fall per hundred feet.

(3) Be sure that the proper system of irrigation is selected, and do not forget that free flooding is the most crude system of irrigation in vogue, and that flooding between borders is best adapted to our conditions here on all but the steeper grades for practically all classes of crops, except rowed crops.

(4) Bear in mind that proper and efficient levelling of the land is absolutely necessary if good results are to be secured, and that time and money



spent in levelling will pay larger returns than the expenditure of any other like amount.

(5) In constructing ditches be sure that they are made large enough and strong enough, and do not forget to clean the silt and weeds out of them every spring.

(6) Do not run water too far between cross ditches; from 50 to 300 feet, depending upon the topography, is far enough—for an even distribution cannot be secured where it is flooded too far.

(7) A good seed bed should be prepared for any kind of crop. A good even stand cannot be secured in rough cloddy ground.

(8) Do not irrigate your crops unless they need it.

(9) Remember that grain needs the most soil moisture during the heading, flowering and soft dough stages, and that alfalfa and pasture need a continuous supply throughout the growing season, and that they require near-



Alfalfa in Stook.

ly twice as much water as grain, if all other conditions are similar. Do not let potatoes dry out after the young tubers have begun to form, until just before harvest time; for if you do, rough, uneven potatoes of low market value will be produced.

(10) Do not let any crop suffer for lack of water during any period of the year, for a week's drought particularly in the early stages of the plant's growth will not only delay the ripening period, but may also decrease the yield as much as fifty per cent.

Remember that diversification of crops is absolutely essential for the best success of any farmer in almost any district, for the one crop farmer is rarely successful over a long period of years in any locality. When one stops to think of the beauties and many advantages of farming under an efficient irrigation ditch where the moisture which is so necessary for the production of large and profitable crops can be turned on and off at will, he can not help but pity the dry farmer. Diversification and irrigation are certainly the very best insurance one can have against the ill effects of hail, frost, rain, drought, poor prices, and hard times. (Applause)

CHAIRMAN: I have no doubt that Mr. Bark has a lot more that would be of interest to us and I would ask him if he would be good enough to let the Executive Committee have any further paper that he may prepare so that the Committee can consider publishing same.

CHAIRMAN: The next will be the place of meeting for the next Convention. I nominate Mr. F. W. Crandall and Mr. Higginbotham as scrutineers and the voting will be by ballot. We have decided to give the proposer or mover of any place ten minutes and the seconder or other supporter five minutes each.

SECRETARY: I will read the communications received from the cities of Nelson and Kamloops. I might also say there is a note at page 215 of last year's report referring to the next place of meeting.

"Kamloops, B. C., 22nd November, 1915.

The President and Members,  
Western Canada Irrigation Association,  
Bassano, Alta.

On behalf of the Municipal Council I beg to extend to the Western Canada Irrigation Association an invitation to hold its next annual convention at the city of Kamloops.

(Signed) M. F. Crawford,  
Mayor."

JOS.

"Nelson, B. C., Nov. 18th, 1915.

R. A. Travis, Esq.,  
Secretary, Western Canada Irrigation Convention,  
Bassano, Alberta.

Dear Sir:—

I beg to enclose "Memorandum of Appointment". Our delegate will be Mr. James Johnstone, and I believe the city of Nelson has arranged for the sending also of a delegate. The delegates have the full authority to extend to the delegates of the Convention an invitation to hold their next meeting at Nelson, B.C. I can assure you the citizens of Nelson and the Kootenays, also the Boundary districts, will consider it a great privilege to be given the honour of attending to the delegates of the Convention if they should decide to meet

in Nelson. That is, it would be our earnest desire to do everything possible to extend all the comforts that are usual on these occasions. Besides, I am justified in stating that a Convention held in the interior of British Columbia would add greatly to the success of your Association.

Wishing every success to the 9th Annual Convention,

Yours very truly,

(Signed) Fred A. Starkey,

President, Associated

Boards of Trade—of Eastern B. C."

### "CORPORATION OF THE CITY OF NELSON.

Nelson, B. C., 20th November, 1915.

To

The President, Officers and Members

attending the Ninth Annual Convention of the Western Canada Irrigation Association at Bassano.

Gentlemen:—

The City of Nelson and Kootenay District of British Columbia beg to extend to you a most hearty invitation to hold your Tenth Convention in the city of Nelson.

The City Council, at its regular meeting held in the City Hall, Nelson, on the 8th of November last, passed the following resolution unanimously:

"That the Mayor and Council of Nelson extend a very hearty invitation to the Western Canada Irrigation Association to hold their annual Convention of 1916 in the city of Nelson."

The Nelson Board of Trade at its meeting held in the Board of Trade Rooms, Nelson, on November 11th last, passed the following Resolution unanimously:

"That a cordial invitation be, and the same is hereby extended by the Nelson board of Trade to the Western Canada Irrigation Association, to hold their annual 1916 Convention in the city of Nelson, and that a copy of this resolution be forwarded the said Association at the coming Convention at Bassano, Alta."

In extending to you this invitation, we feel that there never was a time when conditions made it so important that your Convention should be held in a principal consuming centre of the products of the Irrigated Lands of Western Canada. Many of you have now learned how to produce the finest of irrigated products, but the most successful method of marketing same has yet to be solved.

The mining industry of British Columbia, of which Nelson is the business centre, has entered upon a period of great prosperity and advancement, founded upon the intelligent development of the immense natural wealth stored in our mountains. This means an ever increasing demand for the products of the soil.

The necessity of a closer connection between producer and consumer is constantly being pointed out on all sides in order to bring about mutual prosperity, and the greatest factor in this direction is a personal acquaintance between the Producer and Consumer, and this can be accomplished in no easier and better way than by your coming amongst us at your next Convention.

Nelson district is noted for the quality of its fruit and vegetables and many sections, of which Nelson is the commercial centre, depend upon irrigation in order to secure the best results.

Nelson, as many of you know, is situated in the heart of, and is surrounded by, the most charming mountain and lake scenery in the World, and its climatic conditions are unsurpassed."

For these reasons we know that your members would hold a profitable and pleasant Convention here in 1916; we can assure you that we will do everything in our power to make your Convention an outstanding one for profit and pleasure.

Signed on behalf of the City Council,

(Signed) John J. Malone,  
Mayor.

For the Board of Trade

(Signed) R. W. Hinton,  
President.

(Signed) D. C. M. Morris,  
Secretary."

SENATOR BOSTOCK: In moving that the next place of meeting should be the city of Kamloops, said:

MR. CHAIRMAN: Ladies and Gentlemen,—I have the honour to present the invitation of the city of Kamloops.

"To the President and members of the Western Canada Irrigation Association, at Bassano, Alberta, Gentlemen: On behalf of the Municipal Council, I beg to extend to the Western Canada Irrigation Association an invitation to hold its next annual Convention at the city of Kamloops. Signed, M. F. Crawford, Mayor."

I may say, as has been referred to by the Secretary, the delegates from Kamloops announced their intention of making a bid to hold this Convention at Kamloops next year and to this Convention they have sent down six or seven delegates, representing irrigationists and businesses connected with irrigation in the Kamloops District, Mr. Lawrence, representing the Board of Trade, Mr. J. L. Brown, President of the Agricultural Association; Mr. Johnston, one of the Aldermen of the City, and Mr. Dobson, also an Alderman of the city of Kamloops. These gentlemen will no doubt give you their reasons why from their standpoints, the Convention should be held at Kamloops next year. Seconded by Mr. Dobson.

Messrs. Lawrence, Brown, Johnston and Dobson were then heard from as to the invitation and wish of the city of Kamloops that the next Convention of this Association should be held in their city.

MR. JOHNSTONE: (NELSON) speaks as to the invitation and wish of the city of Nelson that the Convention be held at that city and moves accordingly. This motion was seconded by Mr. Marnoch.



CHAIRMAN: There are apparently only two places. One is Kamloops and the other is Nelson. Ballots will be distributed and each person can vote for either Kamloops or Nelson.

A ballot was thereupon taken.

CHAIRMAN: The vote stands Kamloops 30, Nelson 12. I therefore declare Kamloops as the next place of meeting. (Loud Applause).

The meeting will now adjourn to meet again at 2 o'clock this afternoon.

#### AFTERNOON SESSION—Thursday, November 25, 1915.

CHAIRMAN: We will now hear an address from Mr. G. D. Walters, Irrigation Branch, Department of the Interior, Calgary.

MR. WALTERS: Mr. Chairman, Ladies and Gentlemen,—The investigation of the amount of water required by irrigation to produce maximum profitable yield, with the most economical use of the water, brings us to one of the most economical use of the water, brings us to one of the most important problems that confronts this Congress, as a proper understanding of this question and of those conditions peculiar to irrigation farming will alone make it possible to utilize to the best advantage the water that is available for irrigation.

The excessive use of water is not only wasteful, but it very often interferes with proper plant growth, which results in decreased yield, and unless the natural drainage channels of the country are such as to take off this excess water, it very often very seriously affects the soil. The rise of alkali, which is almost always found in arid and semi-arid districts, is directly due to the use of too much water. With the judicious use of irrigation water and proper methods of cultivation, damage from this source may usually be corrected even on those soils that are very heavily impregnated with these injurious salts. So, though there is the necessity of being assured that a sufficient supply of water is available, care should be taken to supply only that amount that is required for good production.

During the past three years the Irrigation Branch of the Department of the Interior has been conducting "Duty of Water Investigations" in the irrigated districts of Alberta. The work was commenced in the irrigation district about Coaldale in 1913. It has, however, since its inception, consisted of more than the gathering of data for the determination of the "Duty of Water." The men employed by this department have always been at the service of the farmer to assist him to those better methods of irrigation practice. In 1914 we begun similar experimental work at Strathmore, and at the beginning of this last season we started, in the Western Section of the Canadian Pacific Irrigation Block, the work of field irrigation demonstration. At these demonstration plots, which are conducted with the co-operation of the farmers, we are putting into practice those principles of irrigation farming that we find to be most successful.

In our duty of water investigation we realize that to obtain data for the determination of a practical duty, one that will be applicable to large irrigation systems, the investigation must be carried on under ordinary field conditions, and that, if any experimental work be done on small tracts, the methods used must be such that the results obtained may, at least, be approximated by the average farmer. The mere determination of the water applied, however, and the yield obtained would not necessarily indicate that the proper amount had been used, so whenever possible we are asking the farmer to set aside a portion of each tract upon which we are conducting measurements; this portion of the main tract is then divided into two equal parts, one part to be given a lighter irrigation than the main tract, the other a heavier. The return in yield from these three portions will show which of the amounts applied was the most beneficial. We find that the farmers are, with but few exceptions, very glad to co-operate with us in the work. Unforeseen conditions, however, sometimes occur which make it advisable to vary the programme outlined earlier in the season. I trust that in the future we may find the same hearty co-operation that has been given us, and the interest that has been shown in this work in the past.

I will point out to you some of the factors, as we find them in our irrigated districts, which affect, and how they affect, the amount of water required by irrigation.

First are the climatic conditions, which include the rainfall and its distribution, the temperature, the humidity and the wind. Generally speaking the more rain the less irrigation water required. This is not necessarily always true. Irrigation is being practised on a very large scale in some countries where the annual rainfall is very heavy, just because this rainfall does not come at a time when it may be utilized by the crops that are grown.

Let us look at our rainfall and temperature records for several stations scattered over the irrigated districts of southern Alberta and southwestern Saskatchewan, for the years 1903 to 1914. The yearly mean rainfall for these stations varies from 10.72 inches for Medicine Hat to 16.57 inches for Calgary. That for Gleichen is 14.24 inches, Swift Current 14.58 inches, and that for Lethbridge 14.99 inches. Had we included the heavy rainfall for 1902 the average for Lethbridge would be 16 inches.

The mean rainfall for April to September inclusive for these same years varies from 7.77 inches for Medicine Hat to 13.26 inches for Calgary, while that for Gleichen, Swift Current and Lethbridge is 11.30, 10.95 and 11.11 inches respectively. Of this the greatest portion falls within the months of May to August inclusive; while that of the six months, October to April inclusive comes at such a time and in such amounts that it is probable that very little of it is available for crops.

TABLE SHOWING MEAN MONTHLY PRECIPITATION.

1903—1914.

	Calgary	Lethbridge	Gleichen	Medicine Hat	Swift Current
January .....	.47	.75	.65	.52	.56
February .....	.44	.52	.43	.44	.52
March .....	.79	.63	.32	.44	.72
April .....	.80	.69	.59	.52	.67
May .....	2.68	2.47	2.57	1.83	1.88
June .....	3.36	2.84	2.70	2.12	3.26
July .....	2.11	1.36	2.40	1.16	2.24
August .....	3.20	2.19	2.19	1.41	1.87
September .....	1.11	1.56	.85	.73	1.03
October .....	.73	.89	1.02	.67	.74
November .....	.63	.59	.26	.49	.51
December .....	.25	.50	.26	.39	.58
Yearly Mean .....	16.57	14.99	14.24	10.72	14.58
Means April to Sept. ....	13.26	11.11	11.30	7.77	10.95

TABLE SHOWING MEAN MONTHLY TEMPERATURES

1903—1914.

	Calgary	Lethbridge	Medicine Hat	Swift Current	Gleichen
January .....	11.6	15.1	14.0	12.0	6.8
February .....	16.6	18.3	15.3	9.7	9.2
March .....	23.6	28.0	28.7	22.7	26.2
April .....	40.7	43.9	46.0	41.9	40.7
May .....	48.0	51.3	54.4	50.2	48.1
June .....	56.6	59.9	63.9	60.7	56.7
July .....	61.0	64.8	69.0	65.0	61.7
August .....	57.9	62.3	66.0	62.4	58.7
September .....	50.9	54.0	57.7	53.4	50.5
October .....	42.3	45.0	46.8	42.7	41.1
November .....	29.0	33.0	33.3	28.6	28.5
December .....	22.1	24.6	23.0	17.4	18.0
Yearly Mean .....	38.4	41.7	43.2	38.9	37.2
Means April to Sept. inch. ....	52.5	56.0	59.5	55.6	52.7

The yearly mean temperatures for these same stations for these years vary from 37.4 degrees for Gleichen to 43.2 degrees for Medicine Hat. That of Calgary is 38.4 degrees, Swift Current 38.9 degrees, and Lethbridge 41.7 de-

grees. The mean temperatures for the months of April to September inclusive vary from 52.5 degrees for Calgary to 59.5 degrees for Medicine Hat. The mean monthly temperature for each station is higher than 50 degrees for each of the months from June to September inclusive.

If we except Medicine Hat, the factors of rainfall with its distribution and the temperature are very similar. We would then expect, as far as these two factors are concerned, that the water requirements by irrigation would also be similar.

Let us look at the distribution of the rainfall for the months of April to September inclusive, for the last three seasons, in the irrigated districts near Coaldale, Alta. The 1913 records were taken at the Dominion Experimental Farm at Lethbridge. During 1913 we had two drought periods—the first extending from May 17 to June 17, during which time less than one-half inch of rain fell. Grain crops that were not irrigated before or during this drought suffered greatly. The second dry period, which occurred in July, was not so serious, yet it did slightly injure those crops that were not well watered earlier in the season. In 1914 very little rain fell during the period from 1st of April to 25th of June, so that early in the growth of the plant there was but little moisture in the soil at a period when it was especially needed. The rainfall for the rest of these months was also very light. In 1915, although but little rain fell in April, the soil, due to the heavy snow of the previous fall, held a very fair amount of moisture. The heavy rains followed and the very dry period of August brought a very heavy crop to maturity.

A careful study of the distribution of the daily rainfall for southern Alberta shows the average distribution to be very similar to that of the year 1913. That is, that we can expect at least one dry period, and often two, during most years.

There can be no doubt that if we, by irrigation, can properly supplement the rainfall, we should usually obtain as good crops as were secured this last season, 1915.

The proper time then to apply water naturally depends upon the distribution of the rainfall. Too often we are inclined to defer irrigation until the crop has been very seriously injured by drought, always with the hope that there will be rain the next day. The results of such practice may be seen in the yields that were obtained on four wheat fields in the Coaldale district in 1913. (Diagram exhibited.) These fields are near each other. They had been cropped to grain for several years except field No. 3, which was in potatoes the previous year. Any difference in yield is, without doubt, due to the time, or lack of application, of water by irrigation. In the upper part of the diagram the daily rainfall for April to September is shown, and as you see the drought during the period May 17 to June 17 affected the yield in this way. The first field was irrigated the first week of June and produced 31 bushels per acre. The second irrigated ten days later produced 26 bushels per acre or 5 bushels less. The irrigation of the third was not commenced until the 17th of June, at a time when it had already been very seriously affected



by the drought. It produced only 19 bushels, or only 4 bushels more than the crop that was not irrigated. There is no doubt that had the first field received its irrigation earlier or in the fall previous its yield would have been greater. I wish also to point out that the time of irrigation influences the time of maturity. In this diagram the crop that was irrigated earliest was harvested about the same time as the dry crop, while those that were irrigated later, and had been set back by this drought, matured later. Irrigation does not necessarily delay maturity, for if water be applied properly, at the proper time and in proper amounts, the irrigated crop may in years of early drought mature earlier. This did actually occur last year at the duty of water plots at Strathmore, when several plots of irrigated peas matured about 10 days earlier than the unirrigated. The unirrigated peas suffered from drought in the early stage of this growth, and when rain did come a second growth commenced. The irrigated peas, however, made a more normal growth to maturity.

In some of the States to the south it has been found that if the crop is irrigated during certain stages in the growth of the plant, the yield will be increased. Our experience here seems to indicate that so far as the districts that are now under water are concerned, water should be applied so that our drought periods will not interfere with the normal growth of the plant.

The kind of crop is another factor that has to be considered. It has a bearing upon the amount of water required and the frequency with which it should be applied. Different crops require different amounts of water. Alfalfa requires about twice as much water as grain. When alfalfa or other forage crops are grown for seed the water required is considerably less, and when grain is grown for green feed more water may be used than when it is grown for the kernel.

Our investigations during 1913 and 1914 show that the amounts of water applied by the irrigation farmer to a number of fields, under very good farm practice, is a little over 10 inches for grain and about 22 inches for alfalfa. When the rainfall for April to September inclusive is considered, the amount of water applied by rain, plus irrigation, is about 19 inches for grain and 31 inches for alfalfa. These statements are based upon figures obtained by the measurement of water applied under ordinary field conditions in the Coaldale and Strathmore districts. Data collected at the duty of water plots at Strathmore were not used in arriving at these figures, as the work there, though very conclusively showing the value of irrigation for a year like 1914, do not throw much light upon the proper duty of water, because of the lack of uniformity in the soil moisture content of the various plots at the beginning of the season.

These figures, although showing the amount of water actually applied, do not necessarily show the proper duty, as there is no information to show that a greater or less amount may not have produced better results. They do, however, agree very favourably with very reliable data that have been obtained on projects in the United States, where conditions are similar to ours.

The character of the soil and subsoil has a greater influence on the amount of water that the land will take than is usually realized. The loss due to deep

percolation on a porous, sandy and gravelly soil is very great, and it is also very difficult to control, while on our closer soils and on those which have an impervious layer of clay or hard-pan near the surface, the loss may often be reduced to such a degree that it is negligible. But in those open porous soils where the water can readily reach the country's under-drainage, large losses will always occur.

On the closer soils the water is taken in more slowly and it is necessary, at times, to hold the water for a longer period on such soils to secure a proper irrigation. We have found that the application of a two-inch irrigation is possible under certain fields conditions on the closer soils and that a one-foot irrigation can be readily applied to the lighter soils.

The excessive use of water on open soils, when the field ditches are placed too far apart, is very clearly shown in a diagram by Hilgard. When the field ditches are placed too far apart the water may be wasting away into the natural drainage just below the upper ditch before the water on the surface reaches the next lower ditch. In the upper part of the diagram (exhibited) is shown the loss due to deep percolation, when the field ditches are placed too far apart; in the lower part of the diagram, when the ditches are placed closer together, the amount of water taken in is considerably less. The field ditches on close, heavy soils need not, other things being the same, be as close as those for open soils. The distance between field ditches will depend also upon the crop grown, the slope and general topography. In the irrigation of alfalfa and the grasses it may be permissible to place them as much as 250 feet apart, but when irrigating grain the distance should not be more than 150 feet, and ditches as close as 75 feet will often be advisable. Make good sized ditches, well located, and you will find that you can irrigate much easier, much better and more quickly.

I do not think that I can sufficiently emphasize the value of the proper preparation of the surface of the land that is to be irrigated. It is a very discouraging task to those who try to apply water to a piece of land that is full of knolls and hollows, and if it is the irrigator's first experience, his invariable decision is that it is utterly impossible to spread water evenly over the surface of the land. Yet if irrigation is to be most successful this must be done, and a crop cannot come to maturity evenly unless the land receives a uniform wetting. Irrigating rough land is a hard task. It results in reduced yields, causes injury to land, and increases the waste of water. I urge you to prepare your land properly. It will not only save you time and labour at each irrigation, but the uniform wetting that you will be able to apply will result in increased yields. I do not ask you to change the lay of your land. I simply ask you to smooth out the rough spots, most of which can be done by the use of a float or level. This float should be made at least 16 feet long and, for four good horses, 6 or 7 feet wide.

The loss due to surface evaporation is very great. This of course can be reduced considerably by proper methods of surface cultivation, which not only reduces the evaporation, but at the same time produces those soil conditions

which render the plant food of the soil available. It is a mistake to suppose that water alone is necessary to produce good crops. Thorough cultivation is considered necessary in the more humid districts, and it is true to a greater extent in the arid or semi-arid districts where water is applied by irrigation.

The success of the irrigation farmer will depend upon his ability to properly distribute the water upon the land, and upon the judgment he shows in the time he applies that water. Irrigators, like men in any other business, are not equally proficient. There are some that are exceptionally good while others are poor. Those of you who have irrigated know that it requires some skill to properly irrigate a piece of land, and you also know the harm that unattended water will do. Yet there are those who seem of the belief that once water is turned out of the field ditches, it should, as if by magic, spread itself uniformly over the surface of the soil. We find that the water is often permitted to run for hours, and sometimes even days, in the same place. This practice is not only wasteful, but it is decidedly harmful to both crop and soil, and success with irrigation under such conditions could hardly be possible.

All crops do not require the same amount of water; neither do they need this water at the same time. Alfalfa and other forage crops, require more than do the grains and roots, and each require the maximum amount at different times. Then under a single cropping system, especially if that crop be grain, the water that is at your disposal must be applied within but a short period. A cropping system which will require a more constant use of water throughout the irrigation season would not only be more advantageous, but such a system would also spread all the labour required more uniformly over the cropping season. It is not my intention to enter into those other advantages of diversified farming as against a single or speculative cropping system, but I do wish to emphasize the fact that the irrigation farmer should run a diversified farm.

I have not attempted to point out all the factors that influence the amount of water required by irrigation, but I believe that I have taken up those that are of the most importance at the present time.

MR. YOUNG: Mr. Chairman, Ladies and Gentlemen,—There is just one point that I would like to say something upon. I have listened to Mr. Bark and others in their talks on irrigation and I have thought, "What about the nature of the soil and character of the sub-soil." I am not a farmer, although as a boy and going to High school I was called a "*hay-seed*." As I go about and observe what is being done I have thought of it. At one end of the Thomson Valley you can go from a dry farming country into an irrigated country and even in the dry farming country you will find people irrigating, so it seems to me you must know something of the nature of the soil. It occurs to me that Mr. Bark has a definite idea in view and is trying to bring home to you to understand the plant you are growing and then he will come and tell you about the nature of the soil.

MR. WALTERS: I would just as soon have Mr. Bark go into this, but I had this in my speech. On a close soil when you put on the water, the water will naturally stand there and in a few years you are going to bring that water right up to the surface. With an open soil, however, you would not have that trouble although it takes so much longer to irrigate it.

MR. CRANDALL: Mr. Chaiman, Mr. Walters has a float on his chart, but he has given us no information regarding it.

MR. WALTERS: I think this is a better float than Mr. Bark's, but I think I can improve this one. The float should be made narrow. You should pull it the long way. This float is built for about four horses. It is sixteen feet long and from six to seven feet wide. The addition I would put on this float is another piece or length here (illustrating)—another foot, so that when you are going over the knolls you are not pulling with this thing all the time, but you get a little push and collect this dirt. When you go over the lumps it raises the piece here and drops more dirt. The figures for this are, two 2"x12", four 16 feet and a couple of poles and a chain. Pick the stuff up off your farm. It does not cost you anything more than your labour.

MR. FAIRFIELD: Don't you think it best to shoe the cutting board in the centre.

MR. WALTERS: Yes, but most farmers will not shoe the cutting board.

MR. FREYBERGER: If you take it off the back end and you did not need the piece so much, I notice it is better to put it back six feet.

MR. BARK: He hooks it back so as not to let it cut so much more.

MR. FREYBERGER: The only bad feature I see that possibly could come out of all these very excellent addresses we have heard is that they are so elaborate and give one so much to do and we are getting the accumulation of the knowledge and experience of years of these men and they are trying to inject it into a common old plug of a farmer, and get him to understand it. I have an idea that next year when Mr. Bark and Mr. Walters come around and find we are not doing these things just right, they will rake us over the coals and say "Didn't we tell you how to do that at the Convention." We have heard a lot about the proper time to irrigate and how much water to use. These things are very essential, but they have not made it clear and it is not possible to tell a man, or to tell me to-day, when it is the right time to irrigate next year and there is only one rule that the average farmer can go by and that is this,—when he goes out to his farm and it begins to look dry it is a mighty good time to irrigate and do it after you have prepared the land the best you can and you cannot prepare it too well. However, in this district, we do not have much use for a Fresno scraper, but after you have prepared the land as best you can with your own experience or the experience of the people paid to help you, use just as much water as you can get over your land as quickly



as you can and you have done it just about right, and use as big a head as you can get. There is nothing so intricate about irrigation but that any man with ordinary intelligence can understand, and I for one, who have had ten or twelve years experience know that with a little help from some one who knows, you can start and the whole thing will be unravelled to you and first thing you know you will be an experienced irrigator.

CHAIRMAN: I would like to make an observation in regard to what the last speaker has said. We hope to get publications out before you start irrigating next spring and then you can study just what will be of most advantage to you. Before calling on the next speaker, I understand that Mr. Travis desires to make an announcement.

MR. TRAVIS: We give a very hearty invitation to all accredited delegates to a banquet at the Berkeley Hotel, and we wish you to bring your wives along with you. In case anybody has been overlooked as to invitation, I wish it would be brought to my attention and I will have an invitation given.



Mrs. Harry Pattin, of Bassano, a First Prize Winner.

CHAIRMAN: We will now have an address from Mr. W. E. Scott, Deputy Minister of Agriculture, Victoria. (Applause).

MR. SCOTT: Mr. Chairman, Ladies and Gentlemen,—It has been a very great pleasure to me to have had this opportunity of attending this Convention of the Western Canada Irrigation Association, and to listen to the many discussions which have taken place, and hear the capable addresses which have been delivered by men who are so well qualified to speak on the subjects which they have chosen.

I think you will agree with me that this has proved the most successful Convention that your Association has yet held, both in point of interest shown, and attendance. It surely augurs well for the first industry of Canada—that of agriculture—when so many interested farmers gather together for a discussion of matters of mutual interest, and of the many problems which confront the farmer to-day, with the idea of elucidating and solving, if possible, these difficulties, and thereby enabling the farmer to secure the best results for the time, energy, and money, which he has expended in his business.

I assure you that I appreciate very much the honour that has been conferred on me by the Association in inviting me to address this important Convention. Any matter affecting agriculture is naturally of the greatest interest to me in my position as executive head of our Provincial Department of Agriculture.

With your permission, I would like to change the title of my address, which is down on your programme as "Agricultural Opportunities in British Columbia" and to widen a little the scope of my talk, to include Agricultural Conditions throughout Western Canada.

Before I left Victoria, realizing the importance of this Convention, I prepared an address. It was my intention to read it at this Convention, but I would much prefer—though I am no orator—to speak to you off-hand, as one farmer to another.

Before I came into the position which I now hold, I had been engaged in farming all my life, since I was eighteen years of age. I farmed in New Zealand for six years, and over twenty years in our province.

VOICE: (Mr. Rankin)—You do not look that old.

MR. SCOTT—Thanks, Mr. Rankin, that is very nice of you.

So possibly I may know a little about of what I am going to speak. When I started to farm, the educative opportunities which are available at the present day were non-existent. I never had the advantage of attending an agricultural college, and the little that I have learned about farming is by going through the mill, being up against different problems, and having to find the solution for them myself.

It is needless for me to say that I never amassed a fortune at farming, but for twenty-six years I may safely say that I made a good living out of it, and these years were amongst the happiest in my life. (Applause).

This address which I have discarded is the usual sort of paper, with nicely rounded phrases and quite a number of platitudes, but I think that this is not exactly what you farmers want to hear, so if you will excuse any errors in diction, etc., I will speak in an impromptu manner.

This is an irrigation meeting, and it is only proper that matters of irrigation should receive the first attention. I have never farmed under irrigation myself, but naturally have a superficial knowledge of the matter. We have many irrigation projects in British Columbia, and many of our districts have



*W. R. Abbott  
of Maple Creek*



*Seager Wheeler  
of Rosethorn, Sask.*



*W. E. Smith  
of Revelstoke, B. C.*



*R. P. Robinson  
of Crowfoot, Alta.*

Some of the Prize Winners at the Convention.

developed along irrigation lines. In all districts in the province, with a rainfall of say fifteen inches downward, irrigation is practised if water is available, and I am quite satisfied in my mind that, with a lesser amount of rainfall than this, you cannot get the best crops unless you have water available to turn on the land when necessary.

I was much interested in some discussions that have taken place in this Convention, with regard to conditions at Gleichen, and some gentlemen have stated that they have not been able to get satisfactory results from the use of water in this district. I am inclined to think that the reason that they have not got good results is that the right methods have not been adopted, and probably, if some demonstration work were carried out along irrigation lines, you will find that better results can be obtained when the correct methods have been discovered.

Irrigation undoubtedly is an insurance for crops, and in districts with a light rainfall, is absolutely necessary if the maximum returns are to be secured.

There is one point which probably is not sufficiently emphasized at irrigation conventions. Plenty is said about the use of water, but there is not quite enough said about the abuse of it. In the fruit districts of our province many thousands of trees have undoubtedly been killed by the abuse of water. When irrigation was first started in many of our fruit districts, orchardists seemed to think that the more water they turned on the land, the better it would be for the trees, but they have now found out that they were wrong, and that excessive water is most detrimental.

The use of too much water has resulted in engendering fire blight in some of our fruit districts. This is the worst disease that can affect fruit trees, and it has killed off many thousands of trees in our province. Our Provincial Government has had to take a hand in the matter, and we have endeavoured to suppress this blight, and with marked success, but the point that we have had to strongly emphasize to growers is that excessive use of water puts the trees in the right condition for the spread of this disease, and that the first thing they must do is to use intelligence as to the amount of water they put on their land.

We have also in our province many dry farming districts where farmers are getting fairly good results by following correct dry-farming methods, but the districts where this is followed are places where, for one cause or another, it is not possible to secure water for irrigation purposes.

I would like to heartily congratulate you farmers of the Prairie provinces on the really magnificent crops of grain which you have secured this year. You have indeed just cause for your optimism. I always thought that the farther west one goes, the greater optimist one becomes. We do not think that we are far behind in this matter in our province, but I think that you can beat us. I had the privilege of acting as one of the judges of your exhibits, and was surprised at the general excellence of what was shown. The only fault was that you did not exhibit more. The quality was all right, the quantity was at fault.



I was discussing the question of strawberry growing in our province with a gentleman the other day, and he was mentioning the splendid strawberries which are grown in Alberta. I casually mentioned to him that I had seen strawberries in our province which would not go into an ordinary sized tumbler. He remarked to me that that was nothing, and stated that he had seen strawberries grown in the province of Alberta that were six inches in diameter. I then gave it up; it was no good my going any further. That is what I call rosy optimism. (Laughter and applause).

I hope that the splendid crop of grain which has been more or less universal throughout the Prairie provinces may not prove to be an evil in disguise. You will excuse my plain talking. As I come from British Columbia, I can talk more freely here than I could in my own province. I hope it will not encourage you farmers to continue on what I might call the downward road of straight grain-growing. It appears to me that there is too much tendency for newcomers in this fine province of yours to engage in exclusive grain-growing. You have one of the finest tracts of country in the world, and some of the finest agricultural lands in our Dominion of Canada, and your country is pre-eminently adapted to not only growing grain crops but also to mixed farming.

Settlers who come to the Prairie provinces naturally want to get rich as quickly as possible, and are rather too much inclined to stake all in grain on a gamble for a good crop with high prices. A year will come when you will get a low yield, and low prices, and you will then probably regret that you did not start in on mixed farming lines in addition to grain production.

I am of course aware that many of you farmers are keeping plenty of stock on your places, and generally conducting mixed farming operations, and these remarks which I have had the temerity to make do not, of course, apply to you but only to those who are devoting all their land to grain.

Much has been said at this Convention about the necessity for encouraging diversified farming, and it is almost superfluous for me to say any more on it. Judging from the quality of the exhibits which you have here, I am safe in stating that you can grow most of the necessary fodder crops for stock purposes, and I am sure that you will get good results from the keeping of different kinds of stock on your places and breeding up from selection.

Don't you think it would be wiser for a man with, say three hundred acres, to devote a certain part of his land to grain-growing and the rest to growing alfalfa and other fodder crops, roots, vegetables, etc., for stock food purposes so that if you have a bad year with low prices for grain, you have something else on which you can live.

May I point out to you in a few words a contrast, or two pictures,—one mixed farming, and the other straight grain-growing? We will imagine that in ten years' time from now, I re-visit Bassano. The object of my visit is to inquire into the co-operative farm settlements, about which I had heard so much. I get off the train at Bassano, and find a prosperous town, nicely laid out with shade and ornamental trees planted out on the streets. I get into a rig and drive out to see one of your co-operative irrigation settlements. After

driving a few miles along a well-kept road, I come to a settlement. I observe a good school, church, and substantial buildings, with shade trees planted round about the homesteads, nice lawns, and beds of flowers surrounding neatly painted houses. I stop at one of these homes, and see the owner of the farm coming out of the gate of his yard. I say 'Good day' and start talking to him, and he, as is always the case in Western Canada, holds out the good hand of Western Canadian hospitality. He makes me welcome, and asks me to stop and look about the place. I get out of my rig and go with him to see his buildings and stock. I inquire how he is getting along, and he seems to be contented and happy.

We cross the yard, go into the cow-shed, and see half a dozen good, well-bred Ayrshire cattle standing in their stalls. We discuss the different points of his cows, and you can see that he takes a keen interest in all his stock, and that his work is a pleasure to him. We then have a talk re feed rations and fodder crops, and, leaving the cattle-shed, go into the yard to look over his hogs. We see some well-bred Yorkshire sows, with good litters of pigs, and fattening pigs in another pen. After having duly admired these, we go over to see his poultry-house where he has a good flock of well-bred White Wyandottes from which he is evidently getting satisfactory returns.

Crossing back to the house, we notice in an adjacent field a flock of good sheep. After having had a good talk on various agricultural matters, he invites me into the house to dinner. I am introduced to his good wife, and we sit down. There is a nice snowy tablecloth on the table on which is set out butter made on the ranch, eggs from the poultry house, vegetables from the garden, and cream from his dairy cows. A meal fit for a king.

Afterwards, we go out and walk round about his garden and admire the flowers, and generally, I have a good time with him, discussing matters of mutual interest. We finally sit down on the verandah, smoke our pipes, and admire the magnificent view in the west. We see the golden streamers where the sun is sinking over the Rockies, and a feeling of contentment comes over one—a feeling that farming away from the streets and turmoil of city life, is the best life, after all. Later, I get into my rig to drive back into town, and everything looks bright and pleasing to the eye.

Now, for the other side of the question—straight grain-growing. Some days later, I am going through another district, and as I drive along, I come to a scattered settlement. I drive up to a house, and see the owner coming in from cutting a field of wheat. He, like the other, welcomes me in a hospitable manner. I begin to question him about his crop, and ask him how things are going. He seems discouraged, says his crop is a light one, and that the prices are low, and that he does not think he will come out square.

He invites me into the house, and we sit down to dinner. On the table are tinned meat, a pork from Chicago, butter from New Zealand, eggs from Ontario, vegetables from British Columbia, and condensed milk from Washington. After dinner he excuses himself and hurries out to finish his cutting. In walking out of the house, I observe that there is no garden, a lot of tin

cans, empty packing boxes and farm implements are scattered about the place, but nothing to please the eye.

I get into my rig and drive away, and see the same sun sinking towards the foot-hills of the Rockies, but somehow the sun does not seem to shine so brightly as I drive back to town, and I have a depressed feeling. Such is the influence of environment.

The first was a home, and the second was not. This is the point that I want to work up to—that the first consideration is the home aspect. The home should be considered first of all, and it is only by following mixed farming that such homes can be established.

In driving round the district the other day, I had the opportunity of seeing many settlements, and I noticed that most of your houses were quite innocent of paint or whitewash, and I wondered why this was so. Do you not think that the country would look more attractive if your houses were painted or whitewashed? If you had shade and ornamental trees planted out?—and there are many shade trees that will grow very well in your province. Why not, then, plant them out and make your homes a little more attractive? You will, I am sure, take my criticisms in the right spirit. I know that you will say that you are in a new country, and that these things will come later, but I think that the sooner one makes a start, the better.

I was very much interested in the address given by the Hon. Duncan Marshall, Minister of Agriculture for Alberta, on, "How to Keep the Boy on the Farm." If I were asked to give my opinion as to the principal reason why difficulty was experienced in keeping our boys on the farm, I would say that the chief drawback—and I speak with feeling in this matter—is that you are making the life of the boy on the farm too much of a drudgery.

When I first went to farm in New Zealand, as a boy, I worked for my board, and they certainly got my board out of me. I had to get up at half past five in the morning, go out to the stable, feed, water, and clean a team of horses. When I had done that, I had to sit down and milk as many as ten cows. After that, I would get breakfast. Then, there would be the general work of the day—say ploughing, when one would have to be between the stils of a plough for eight hours. At six o'clock, the horses would have to be cleaned up, fed, and bedded down for the night. Then, one had to sit down and milk those same old ten cows again, take the milk to the separator house, turn the separator, wash up the pans, and then one was quite ready to go to bed. The same thing happened on Sundays as on week days.

Now, if you make your boys work like that, you will drive them off the farm. Of course, I know that we are getting more enlightened in these days, and that I am giving you an extreme illustration.

Youth craves excitement and healthy exercise, and you must give your boy a chance for play as well as work. There is also a great deal in what Mr. Marshall said, and others have touched upon it—and that is, that if you want to keep your boy on the farm, you must interest him in the work.

I know of several instances in our province where boys have grown up and stayed on the farm, and you cannot drive them away from it. In most instances which I have investigated, I have found that this has resulted from giving the boys an interest in the work. Give them a piece of ground. Show them how to grow, say potatoes, and let them take the crop for themselves. Give them a pig or two, a heifer, or some poultry, and let them run them themselves, and when they are sold, be sure that you do not put the proceeds in your own pocket. Give the boy a show.

Then, there is the question of education for the boys. I am a strong admirer of what you have done in your province of Alberta by way of farm schools. They are practical and efficient, and I think are run along correct lines, and I would very much like to see some similar line of work conducted in our province. They are, above all, practical, and if you take a boy, and show him how to do different kinds of farm work, after a short time he will be able to go back to the farm and give his father some pointers.

Now, I am sure, at the end of a Convention like this, most of you must be getting wearied of addresses and I will not delay you much longer. I will just touch upon one or two further points as quickly as I can, the first of which is the question of co-operation.

This has always been a pet hobby of mine, as I realize that the lack of co-operation is probably one of the greatest drawbacks with which the farmer has to contend at the present time. It is a common saying, but a very true one, that successful co-operation amongst farmers has only been accomplished upon the ashes of failure. I hope, however, that this will not be said of us in Canada, and that we will, before it is too late, come together for the protection of our mutual interests.

I would, first of all, like to say that I am quite aware of the good work along co-operative lines which has been done in the provinces of the Middle West, and also in British Columbia, by means of associations like the United Farmers of Alberta, the Grain Growers of Saskatchewan, creameries, fruit associations, and by other methods, but I would like to ask you farmers this: Do you really think that you are getting the price for your produce at the present time that you should get? The situation appears to be as follows: On the one hand, you have got a body of men—the farmers—acting along individual lines, and with no cohesion; on the other hand, you have the consumer, similarly disorganized; in between, you have the wholesaler and retailer, who are perfectly organized, and working along sound business lines. This middle body is controlling the situation. They say to you farmers—I want this, and this is the price I will pay you. They then turn around to the consumer—This is the price for which I will sell this produce to you. And you may be sure that there is a pretty big gap in between.

Now, this gap has got to be bridged, and how are you going to do it? There is only one way, and that is, by effective co-operation along sound business lines. I hold no brief for the middleman or retailer, but I do know that



farmers will never come into their own till they are in a position to fight these men with their own weapons.

I know of many instances where profits of from 100 to 200 per cent are made by those who are marketing and distributing your produce. How are you going to remedy this? You have got to come together, sink all rivalries and jealousies, and act as one unit, and until you do so, you are not going to get the results you should. United you stand divided you fall.

The farmer, as a rule, is not a good business man. Some of you are, but the majority are not. After all, the duty of the farmer is to produce the articles of the farm at the lowest cost possible, and have them ready for the market. There his duty should end. The marketing of the produce should be undertaken by the best business brains you can buy. The individual farmer naturally cannot afford to get a man to sell his produce for him, but if five thousand, ten thousand, or fifteen thousand farmers act together, they are able to pay for good business brains to sell their produce for them.

The farmer can produce the goods all right. The difficulty has been selling them at profitable prices, and you farmers will never get hold of the end of the stick that rightly belongs to you until you come together and act in unison.

I would like to talk longer on this subject, but it is quite impossible, without taking up too much of the time of this Convention. (Applause).

The farm is like a manufacturing plant. By means of it, the raw material is turned off as a finished product. In this province of Alberta, you have splendid opportunities for mixed farming, and I have observed with pleasure that in the last few years, your country has largely developed along these lines, but there is plenty of room for further development. We must, of course, realize that these Prairie provinces are, as they have been called, the granary of the Empire, and that they will have to continue to produce grain in large quantities, because our Empire is looking more and more to you for the grain that is required to feed the teeming populations of the old lands, but in addition to exploiting your grain-growing, there is no reason why with the natural advantages you possess you should not also be a great diversified farming country.

May I add my recommendation to those that have been given by many prominent agriculturists in your midst, and which has been strongly emphasized at this Convention—Keep more and better stock on your farms, grow a larger quantity of alfalfa and forage plants for feeding to this stock, and in so far as possible, make your farm self-supporting. Let your produce walk off the farm to the market in the way of fattened stock, instead of being sold as hay and grain.

A great deal has been said at this Convention about alfalfa growing, and about the difficulty of marketing it at a satisfactory price. The trouble with farmers is that when the price of any commodity is high, they all rush in and grow it. The safest way is to keep an even average, to conduct your farm operations year by year in the usual way, keep the same amount of stock, grow

the same amount of potatoes, grain, vegetables and fodder crops year by year, and you will find that, taking one year with another, things will even up all right, and keep a good balance.

I am not an advocate of specialization in any one phase of agriculture. I consider that for the average man, mixed farming is infinitely safer, and in the long run more profitable. There is one man in a hundred a trained specialist, but it is far better for the average farmer to engage in mixed and diversified farming.

Now, with regard to agricultural conditions in our province of British Columbia. It is not my intention to say much on this subject, as most of you people are acquainted with the conditions which prevail in our province. They are totally different to yours. British Columbia is essentially a place of homes and farms on small acreage—what I might call intensified diversified farming. There are many farmers who are securing excellent results on acreage ranging from thirty to fifty acres of ground. Many people contiguous to our cities are farming on even less acreage than this, but I do not think it wise to encourage men to farm a less acreage than mentioned in our province. There are a few men who, owing to their special knowledge, will make good on a few acres of ground, but the average man will not.

When you leave this province to go into British Columbia by way of the Crowsnest Pass, you come into the Kootenay district, of which my old friend, Mr. James Johnstone, has painted the glories in such a capable manner, that it will be quite needless for me to recapitulate. Leaving the Kootenay, and proceeding west, one gets into the Boundary and Kettle Valley districts. In this part of the province, a certain amount of fruit growing is practised, but the majority of the farming is along mixed farming and stock raising lines. There are several good irrigation projects, and people are getting good results where they have water available.

Further north from the Boundary, is the Okanagan and Arrow Lakes country. The Okanagan is, as you are aware, the greatest fruit producing district of the province. This year, there will be shipped out of the Okanagan Valley nearly two thousand carloads of fruit. Considering that the commercial fruit industry in this section is only about fifteen years old, this is a very satisfactory showing.

North from the Okanagan is the Shuswap country, which is also a good fruit district, as well as suitable for dairying, stock raising and general mixed farming.

Proceeding west along the line of the C.P.R., we come to what is probably the greatest dry farming and stock raising part of the province, viz., the Thompson, Lillooet, and Chilotin districts, where the nutritious bunch grass holds sway, and where some of the finest stock in the province is produced. Some good irrigation projects have also been developed with the best results. I am very glad that, owing to the fact of the next Convention being held at Kamloops, you will have an opportunity of seeing the Thompson Valley. You will be able to see what can be done in the way of growing alfalfa. I saw, early this

fall, a field of alfalfa in the Thompson Valley cut for the fourth time, and the owner told me that his yield per acre would be as much as nine tons of alfalfa. I have seen other fields that will fully average this, that have been down in alfalfa for twenty years.

When I came to the province, twenty-five years ago, it was common talk that the land in this district was absolutely useless, except for ranging horses and cattle. To see it now, since irrigation has been developed, a wonderful change has been made, and to use a common saying, irrigation has "caused the desert to bloom and blossom like the rose."

One sees many fine homes with alfalfa and other crops growing luxuriantly, and fruit trees laden with luscious fruits, and I think that those people who say that as good results can be got where there is a rainfall of fifteen inches or under, from dry-farming methods, are mistaken. Irrigation has worked a revelation in the way of crop production in many districts of our province, and I am sure it will do the same here.

Leaving the Thompson Valley, and proceeding west along the line of the C.P.R., we come into what is called the Lower Mainland country, comprising the delta of the Fraser Valley. Probably nowhere in Canada is there land of greater richness than the country contiguous to the Fraser river in this district. It is somewhat similar to the delta of the Nile. There is a record of 183 bushels of oats to the acre in this district, and of 97 bushels of wheat. It is a district in which clover and other grasses grow luxuriantly, and is pre-eminently adapted for dairying purposes. You will see some of the finest herds of Holstein, Jersey, and Guernsey cattle in the Dominion of Canada in this section.

Vancouver is the Pacific terminus of the Canadian Pacific Railway, and is a city which is destined to become a large commercial centre, and one of the biggest cities on the Pacific slope. Leaving Vancouver by the luxurious boats of the Canadian Pacific Railway, a short run brings us to Victoria, the capital of the province, on Vancouver Island. Victoria is generally known as "Victoria, the Beautiful" and well merits this title.

North of Victoria are many districts which are very suitable for general mixed farming purposes, and which have been somewhat extensively settled.

This is a short description of the principal farming district of southern British Columbia.

Farther north, there are some very large tracts of farming lands. Central British Columbia is that part of the province recently opened up, and developed by the completion of the Grand Trunk Pacific railway.

Between Hazelton and Fort George, there are millions of acres of fine agricultural land, that can be cleared at a low cost. The timber on the land is a light growth of poplar and willow, and occasionally spruce, and a large proportion of this land can be cleared at prices ranging from \$10.00 to \$50.00 per acre. This will eventually prove to be one of the greatest stock-raising and mixed farming districts of the province.

North of this, we also have large areas of land in the Peace River country access to which will be given from the Pacific coast by the line of the Pacific Great Eastern now in course of construction.

In conclusion, Mr. Chairman, may I say a few words on the question of inter-provincial trade, and incidentally make an appeal to you people of the Prairie provinces on behalf of reciprocity in trade between your country and our province of British Columbia. Our interests are closely interwoven, and in a way we cannot very well do without each other.

At the present time, a great economic wastage is taking place in our province. We sent out in the year 1914 nearly \$25,000,000 to foreign countries and other provinces of the Dominion for agricultural produce practically all of which can be raised to the best advantage in the Dominion of Canada. From advance figures collected by our Statistical Branch, I am able to say that our importations this year show a very material reduction, which shows that we are beginning to realize that it is up to us to produce for our own requirements.

In the past few years, we have all been too much imbued with the spirit of real estate speculation. We bought and sold land with no thought for the morrow. The inevitable crash came, and conditions now are very different to what they were a few years ago.

Our urban development had preceded, not followed as it should have done our rural development. Now it is up to us to develop as quickly as possible agriculture in our province, and as we do so, our cities will legitimately grow. We have seen our mistakes of the past, and are now endeavouring to remedy them.

You people of the Prairie provinces have done the same thing and are suffering from the same causes. It is no use, however, crying over spilt milk. What we have got to do is to get down to business and correct the mistakes of the past.

In our province this year, grain production has increased by about 50 per cent. There is very little grain grown for sale in British Columbia. It is grown and fed to stock, or as a forage food. We look to the people of the Prairie provinces to sell us grain and mill feeds. Last year, we imported \$12,000,000 worth of meat, butter, eggs, and mill feed. On the other hand, we send you our fruit, vegetables, lumber, etc. Now, don't you think that it is in the interests of both our provinces to encourage as much as possible inter-provincial trade? Why should you in the Prairie provinces send to Washington for fruits and vegetables? Why should we in British Columbia send to Washington for hay or grain? You can get better fruit from British Columbia than you can from Washington. When you spend \$1.50 for a box of apples coming from Washington, that money is lost to the Dominion of Canada. When you buy a box of apples for \$1.50 from British Columbia, the money is kept in circulation in the Dominion, and everyone benefits.

If we could eliminate our foreign imports, and keep the money circulating in the Dominion, it would mean better times all round. I would ask you,



therefore, when you are buying fruit or vegetables, to give our province the preference, everything else being equal, as regards price and quality. Let us both endeavour to develop inter-provincial trade in every way we can.

Now, Mr. Chairman, I must apologize to you and this Convention for taking up so much of its time. If I had read the paper I had prepared, you would certainly have had a more finished address, but I do not think that you would have appreciated it very much.

The points that I want to emphasize are:

1. Get more and more into diversified farming.
2. Keep more and better stock on your places.
3. Try and feature the home aspect of your farm life.
4. Act in unison along sound business co-operative lines.
5. By proper and considerate treatment keep your boy on the farm.
6. Increase your production. Our Empire expects you to do so.
7. Knowledge is power. Increase therefore your knowledge and invoke the aid of science in your farming operations.

I thank you for your kind attention. (Applause).

MR. BARK: I have explained how to get into alfalfa, clover and other pasture grasses and it is just as easy to get into pigs and poultry and other stocks. It is a lot easier to start out with a couple of old sows. If you keep your calves and the female colts it will surprise you how quickly you will get into diversified farming.

MR. PETERS: Mr. Chairman, Ladies and Gentlemen,—There was a question that came up before the Executive regarding certain changes in the Constitution of the Association, namely, the basis of representation. Mr. Young and myself were delegated to look into this and we made a report to the Executive which was confirmed and I was instructed by our Chairman to give notice at this time that at the next annual meeting, these amendments will be brought before the meeting. The motion will be to add two new paragraphs to the membership as follows: The Controller of Water Rights of British Columbia and one delegate from the Water Rights Branch of the Department of Lands. Another paragraph; The Chief Engineer of the British Columbia Hydrographic Survey; and, also, in a certain paragraph which mentions the names of the Dominion Superintendent of Forestry and the Chief Superintendent of Forestry, to add to that the Chief Superintendent of the Dominion Water Power Branch. This motion will be brought up at the next annual meeting.

CHAIRMAN: The Secretary has some letters that he wishes to read.

SECRETARY: I have received the following letters from some of those who have been unable to be with us.

(TELEGRAM)

Calgary, Alta., Nov. 23, 1915.

Irrigation Convention,  
Bassano, Alta.

Regret that I am not able to be with you.

A. D. Campbell.

"Regina, Sask., November 18th, 1915.

Secretary, International Irrigation Convention,  
Calgary, Alta.

Dear Mr. Rankin,—With reference to your message of even date, I regret very much that the other calls on my time will not permit me to be with you at your Convention next week, much as I should like to. I have to be in Regina next week for several meetings and conferences.

However, I have made arrangements for Mr. Domaille, our Acting Weed Commissioner, to attend the Convention at Bassano as a representative of this Department.

Trusting you will have a very successful gathering and regretting my inability to attend in person, I am,

Yours very truly,

(Signed) W. R. Motherwell."

"Bassano, 24th Nov., 1915.

Secretary: Bassano.

Dear Sir,—It is with extreme regret that I find myself forced to leave Bassano before the completion of the Convention, owing to a prior engagement. I had hoped that at the banquet an opportunity would have been afforded me to express, in my halting way, on behalf of the Saskatchewan delegates and myself, our appreciation of the kindness and consideration shown both to ourselves and our exhibits by the Officers and Members of your Association.

Please convey to them our thanks, together with my own personal apologies and excuses for not being able to accept your invitation to the banquet.

Believe me, dear Mr. Rankin,

Yours very sincerely,

(Signed) Thomas Domaille,  
Provincial Representative for Saskatchewan.

"1161 Granville St., Vancouver, B.C., Nov. 20, 1915.

Secretary, Western Canada Irrigation Association,  
Bassano, Alta.

Dear Sir,—I feel very much "out of it" this year, in not being able to take part in the Bassano Convention, but as you know, circumstances will not permit.

Kindly convey to the Executive, Local Board of Trade, and Members, my regrets at not being able to be with them this year, and wishing you all kinds of success for a record Convention, I am,

Yours very sincerely,

(Signed) Chas. W. Dickson,  
First Vice-President."

"Victoria, October 25, 1915.

Secretary, Western Canada Irrigation Association,  
Calgary, Alta.

Dear Mr. Rankin,—I am in receipt of your letter of the 22nd of October and note what you say with reference to the Annual Convention which is being held at Bassano in November. I regret very much that my engagements will make it impossible for me to attend the Convention on the dates mentioned, but will be glad to arrange for Mr. Young to be present.

Hoping your Convention will meet with every success, I am,

Yours very truly,

(Signed) Wm. R. Ross,  
Minister of Lands."

"Ottawa, October 22, 1915.

Dear Sir,—I find that it will be quite impossible for me to attend the Convention of the Western Canada Irrigation Association at Bassano on the 23rd November, next. I very much regret this, but find that my numerous and lengthy absences from Ottawa during the past season have resulted in a considerable accumulation of work which it is absolutely necessary for me to attend to.

The programme which you forwarded to me a day or two ago indicates that you will have a fine array of speakers and the subjects for discussion seem to be particularly well-chosen. I trust that you may have a large attendance and that the Convention may prove, as it should, the best in the history of the organization.

Although I shall be unable to attend personally, it has been decided that Mr. W. M. Bailey, Assistant Superintendent of Irrigation will attend, although I believe Mr. Bailey would prefer not to take any prominent part in the discussions. I will very much appreciate anything you can do to make Mr. Bailey's first visit to the West valuable to him.

Yours very truly,

(Signed) E. F. Drake,  
Superintendent of Irrigation

Secretary, Western Canada Irrigation Association,  
P. O. Box 1317,  
Calgary, Alberta."

"Penticton, B.C., November 20th, 1915.

Secretary:  
Bassano, Alta.

Dear Sir,—I regret that I find it impossible to be with you at your Convention in Bassano this year. I am deeply sensible of the usefulness of the Western Canada Irrigation Association and can only wish that conditions would have permitted of my being present.

With best wishes for a successful Convention, I remain,

Yours very truly,

(Signed) Edgar W. Dynes,  
Secretary."

EWD—D.

"Victoria, Oct. 19th, 1915.

Secretary, Western Canada Irrigation Association,  
Department of Natural Resources,  
Calgary, Alta.

Dear Sir,—I regret very much that under all conditions, it will not be possible for me to attend the Convention at Bassano, especially as it will prevent my addressing the Convention on the "Marketing of British Columbia Fruit in the Prairies."

As Mr. Scott has definitely undertaken to be present, I have discussed the matter with him and I would suggest that you accord him a place on the programme on the subject suggested to me, namely, "Getting British Columbia Fruit to the Prairie Farmer," or some similar subject.

Yours very truly,

(Signed) R. M. Winslow,  
Horticulturist."

"Larchmount Farm, Pambrun, Sask., Nov. 9th, 1915.

Dear Sir,—Kindly convey my thanks to your Association for its generous feeling in regards to my exhibits.

I will try to make a showing at Bassano, but having had to purchase a small threshing outfit to thresh my pure grains which are in stack, I cannot make a definite promise, but will do my best.

I may place a small collection of grains on exhibition,

Again thanking you for kindly interest, I am,

Yours,

(Signed) Wm. S. Simpson."

"Hermiston, Oregon, Nov. 16, 1915.

Dear Friend Rankin,—I regret very much to write you of my inability to attend the meeting of the Western Canada Irrigation Association at Bassano, Nov. 23rd, 24th and 25th. The fact of the matter is that my wife, my daughter and myself are all down with the grip. I should be leaving here not later than next Sunday and that is now entirely out of the question.

I had planned a whole lot on this meeting and am deeply disappointed over the situation. If the invitation is still open to me next year I shall make another effort to come.

Wishing you success with the Convention and with kind regards to all my friends and acquaintances there, I remain,

Yours truly,

(Signed) J. T. Hinkle."

"Nov. 20th, 1915.



Secretary, Western Canada Irrigation Association,  
City.

Dear Sir,—I beg to acknowledge with thanks, receipt of your favour of Nov. 16th, enclosing three certificates of appointments for delegates to the Western Canada Irrigation Association Convention.

I deeply regret the fact that I shall be unable to take advantage of your kind offer and be in attendance in person, but I am enclosing two certificates which if you would kindly see that they are presented to the proper parties, you will much oblige.

Trusting that this Convention will be the successful one that others of a like nature have been in the past, I am,

Yours truly,  
(Signed) M. C. Costello,  
Mayor."

"Regina, 4th November, 1915.

Dear Sir,—I greatly regret to find that the work requiring attention by myself and some imperative appointments make it impossible for me to attend the Convention of the Western Canada Irrigation Association at Bassano on November 23rd-25th next. Attendance at two California Congresses kept me away from the office most of September and I had hardly arrived home when I got a summons to Ottawa to attend a conference there regarding disabled soldiers. The two absences have resulted in an accumulation of work which will preclude my attendance at your Convention which I regret very much. I sincerely hope the Convention may be both very successful and interesting.

Believe me,

Yours very sincerely,  
(Signed) Walter Scott.

Secretary, Western Canada Irrigation Association,  
Calgary, Alberta."

"Victoria, 27th Oct., 1915

Secretary, Western Canada Irrigation Association,  
P. O. Box 1317,  
Calgary, Alta.

Dear Sir,—I beg to acknowledge receipt of your communication of the 19th inst., extending me an invitation to be present at your Ninth Annual Convention to be held at Bassano on November 23rd.

I regret to say that owing to my other engagements it will be impossible for me to be present with you on that occasion but I hope that you will have a very satisfactory meeting.

I will be glad to forward you a photograph a little later on if I can find one that I think is suitable.

Yours truly,  
(Signed) N. J. Bowser,  
Minister of Agriculture."

"Ottawa, October 27, 1915.

Dear Sir,—I am just in receipt of the official call for the Ninth Annual Convention of the Western Canada Irrigation Association, to be held at Bassano, Alberta, November 23rd, 24th and 25th.

Owing to previous engagements, it will be impossible for me to attend the Convention, but I am arranging to have a representative of the Dominion Water Power Branch present, also a delegate from the British Columbia Hydrographic Survey and the Manitoba Hydrographic Survey.

Hoping that your Ninth Convention will be as interesting and instructive as the previous ones, I am,

Yours faithfully,  
Dominion Water Power Branch,  
(Signed) J. B. Challies,  
Superintendent.

Permanent Secretary,  
Western Canada Irrigation Association,  
Box 1317,  
Calgary, Alberta."

"Forestry Branch, Ottawa, October 15, 1915.

Dear Sir,—I have just got back to Ottawa and find your letter of the 22nd ultimo inviting me to attend the Convention of the Western Canada Irrigation Association at Bassano in November, and regret very much that it will not be possible for me to get out West again this year. I have always enjoyed the Conventions of the Association and would like to have been able to attend this year.

Wishing you all success,

Yours faithfully,  
(Signed) R. H. Campbell.

Secretary, Western Canada Irrigation Association,  
Calgary, Alberta."

" British Columbia Fruit Lands, Limited.

Kamloops, B. C., Nov. 17th, 1915.

C. E. Lawrence, Esq.,  
President, Kamloops District Farmers' Institute,  
Silent Pool Branch,  
Kamloops, B. C.

Dear Sir,—I beg to acknowledge receipt of your letter of 13th inst.

I am afraid it will be impossible for me to attend the Convention at Bassano—I am expecting the new manager of Cherry Creek here any day now and also expect a shipment of cattle to arrive in a few days and could not possibly therefore absent myself till the new manager is settled and the cattle expected are put away for the winter.

Nevertheless, I appreciate very much your kind invitation to be a representative of this District.

Yours truly,  
(Signed) Meighan,  
Director."

"The Park Ranch,

Coaldale, Alberta, Nov. 12, 1915.

Secretary, Western Canada Irrigation Association,

Box 1317, Calgary, Alberta.

Dear Sir,—Your letter 3rd inst. received and I thank you for the kind invitation extended, but as I have not yet been able to get my threshing done it will be impossible for me to attend. I am sure the farmers will all appreciate your having the Convention late in the season for their benefit, and I for one am very sorry indeed not to be able to attend. I believe the programme as arranged will prove to be the most interesting and instructive that has yet been presented by the Association.

Again thanking you for the cordial invitation, I remain,

Very truly yours,

(Signed) W. H. Pawson, Jr."

"Department of the Interior  
United States Reclamation Service.

Billings, Montana, November 16, 1915.

Dear Sir,—Your letter of October 30, 1915, in which you request of Mr. I. D. O'Donnell, Supervisor of Irrigation, that he forward to you a copy of his address "Better Farming" for your convenience in getting off an early report of your Convention.

Mr. O'Donnell has been called to Denver, Colorado, on important business and it is improbable that he will be able to conclude his work there in time to reach Bassano by Tuesday, November 23rd. Before leaving for Denver he requested me to forward to you a copy of his address, which I am doing herewith.

Mr. O'Donnell is much interested in your Convention and has planned to attend. The call to come to Denver was unexpected, however, and will make his attendance impracticable.

Very truly yours,

(Signed) Robt. C. Elting,  
Chief Clerk.

Permanent Secretary,

Western Canadian Irrigation Association,

Calgary, Alta., Canada."

"The Taber Irrigation District

Taber, Alta., Nov. 20th, 1915.

Secretary, Western Canada Irrigation Association,

Calgary, Alta.

Dear Sir,—I have your letter of the 8th inst., and thank you for the invitation to our directors to attend the Convention at Bassano. Mr. Sundal is attending the Claresholm School, and I found that the letter addressed to him was sent on the day I received your letter.

I regret that we will not be able to take advantage of your invitation this year, as the directors are just getting the threshing cleaned up, but you can count on us for the next Convention.

Again thanking you for the invitation, I am,

Yours very truly,

(Signed) C. C. Cook."

MR. JOHNSTONE: I would like to give official notice to this meeting that at the next Convention we will invite the Convention to be held in the city of Nelson and you are all welcome to our city of Nelson after the next Convention.

Moved by Mr. J. C. Dobson.

Seconded by J. L. Brown.

WHEREAS the Ninth Annual Convention of the Western Canada Irrigation Association is now nearing the close of a most successful meeting, and:

WHEREAS the co-operation and hospitality of the citizens of Bassano has been to a large extent responsible for this:

THEREFORE be it resolved: that this Convention pass a hearty vote of thanks to the Mayor, the Board of Trade and the Citizens of Bassano for their splendid reception, co-operation and entertainment to the delegates.

Carried Unanimously.

MR. LAWRENCE: Would it not be fitting at this stage of the proceedings to have a little discussion for the proper time for the Convention to be held next year? Would it not be of assistance to the Executive in fixing the date for the Convention?

MR. FAIRFIELD: In this connection it seems to me that when the Convention will be held in British Columbia, the great majority of delegates will be from British Columbia and the great majority of delegates at this Convention are from Saskatchewan and Alberta and I think it would be wise to leave it to the discretion of the Executive who are responsible for the getting up of the Convention for next year.

MR. SCOTT: What I think is we should get an expression from the Convention as to whether the end of June or the beginning of July would be a good time for the Prairie farmers. It would be all right for the people of British Columbia, but would it be so good for the people of the Prairie provinces.

CHAIRMAN: With reference to that matter, I have given some thought to it. My experience is that so far as the Prairie provinces are concerned, between the 20th of July and the time haying starts is good. I think the gentlemen from Kamloops in British Columbia who will have most to do with it, might have an expression as to when it would suit the Prairie farmers—if between the 1st and 20th of July would or would not suit them. The Executive last year went to a lot of correspondence in finding out a day to suit the people. Of course a date such as I mention, would not allow us to have the products to exhibit that we have at this Convention.

MR. LAWRENCE: Do you think the end of September would be a better time?



MR. PEARCE: No sir. That is the very height of working operations at that time.

MR. FAIRFIELD: The farmers on irrigated land for instance in the Lethbridge district, are sometimes pretty busy up to the 10th or 12th of July with the first cutting of alfalfa, if they happen to be delayed, and it seems to me that the 20th of July would be somewhat early. I would think the end of July.

CHAIRMAN: Perhaps we can afford to forget the man who is not an irrigator but my experience is that the man cutting natural hay cuts after the 20th of July. In Saskatchewan they passed a law as some of the old timers here will remember, that no one could go out to the public domain and cut hay before the 25th of July and that is how that date came to be fixed so in the minds of farmers.

The election of officers took place with the following result:

Honorary President: The Honourable the Minister of the Interior.

Honorary President: J. S. Dennis.

President: The Hon. W. R. Ross.

Vice-President: Hon. Duncan Marshall.

Second Vice-President: Senator Bostock.

#### EXECUTIVES

J. L. Brown, Kamloops.

Jas. Johnson, Nelson.

F. Maurice Smith, Penticton.

W. E. Scott, Victoria.

F. H. Peters, Calgary.

G. R. Marnoch, Lethbridge.

R. A. Travis, Bassano.

Jos. Dickson, Maple Creek.

SEN. BOSTOCK: I wish to propose a most hearty vote of thanks to the most energetic Secretary I have ever had anything to do with and I have been connected with all sorts of Associations, but I have never run across a more energetic Secretary than Mr. Rankin and I wish to propose a hearty vote of thanks to Mr. Rankin and also to congratulate him.

CHAIRMAN: I have great pleasure in tendering to you, Mr. Rankin, the hearty vote of thanks which has been passed by this Convention. I do so because I think you are not only the most energetic Secretary I have had anything to do with, but you exercise a great deal of tact and cause less dissatisfaction than any other Secretary might do. (Vote of thanks given, all rising).

MR. RANKIN: I do not think there is very much that I can say except to thank you. I have of course had a great interest in this Association and it is part of my regular work and I think perhaps you are giving me a little more credit than is my due. There are others who have helped to make it a success and who are always behind me to back me up. At the same time, I am very proud to have your congratulations and good wishes and it is something I will always remember. I thank you very much for your expressions. (Applause).

CHAIRMAN: We will adjourn this session to meet again around the banquet table when the list of winners of the exhibition will be announced.

The meeting closed with the singing of

GOD SAVE THE KING.















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WESTERN CANADA IRRIGATION  
ASSOCIATION

REPORT OF THE PROCEEDINGS OF  
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HD 1741 C2W52 9th 1915  
Western Canada Irrigation  
Association.

Report of the proceedings of  
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